WORLD MALARIA REPORT 2015

World Health Organization

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WHO GLOBAL MALARIA PROGRAMME

WORLD MALARIA REPORT 2015

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Foreword

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Director-General
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This *World malaria report* is released in a milestone year: 2015 marks the end of the era of Millennium Development Goals and the dawn of a new global agenda for human health and prosperity, the Sustainable Development Goals. It is also the target year for malaria goals set by the World Health Assembly and other global institutions.

Against this backdrop, our report tracks a dramatic decline in the global malaria burden over 15 years. Target 6C of 2000 Millennium Development Goals called for halting and beginning to reverse the global incidence of malaria by 2015. The report shows — unquestionably — that this target has been achieved. Fifty-seven countries have reduced their malaria cases by 75%, in line with the World Health Assembly's target for 2015.

For the first time since WHO began keeping score, the European Region is reporting zero indigenous cases of malaria. This is an extraordinary achievement that can only be maintained through continued political commitment and constant vigilance. The Region of the Americas and Western Pacific Region have also achieved substantial reductions in malaria cases.

The African Region continues to shoulder the heaviest malaria burden. However, here too we have seen impressive gains: since 2000, malaria mortality rates have fallen by 66% among all age groups, and by 71% among children under five.

Progress was made possible through the massive rollout of effective prevention and treatment tools. In sub-Saharan Africa, more than half of the population is now sleeping under insecticide-treated mosquito nets, compared to just 2% in 2000. A rapid expansion in diagnostic testing, and in the availability of antimalarial medicines, has allowed many more people to access timely and appropriate treatment.

Prevention and treatment efforts are saving millions of dollars in healthcare costs. New estimates in our report show that reductions in malaria cases in sub-Saharan Africa saved an estimated US $900 million over 14 years. Mosquito nets contributed the largest savings, followed by artemisinin-based combination therapies and indoor residual spraying.

But our work is far from over. About 3.2 billion people remain at risk of malaria. In 2015 alone, there were an estimated 214 million new cases of malaria and 438 000 deaths. Millions of people are still not accessing the services they need to prevent and treat malaria.

Approximately 80% of malaria deaths are concentrated in just 15 countries, mainly in Africa. Taken together, these high-burden countries have achieved slower-than-average declines in malaria incidence and mortality. In most of these countries, weak health systems continue to impede progress.

To address these and other challenges, WHO has developed a *Global Technical Strategy for Malaria 2016-2030*. The strategy sets ambitious but achievable targets for 2030, including a reduction in global malaria incidence and mortality of at least 90%. Achieving these targets will require country leadership and a tripling of global investment for malaria.

We have arrived at a pivotal moment. Global progress in malaria control over the last 15 years is nothing short of remarkable. Let us not lose momentum. Together, we can transform the health, well-being and livelihood of millions of people across the globe.

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Abbreviations

ACT	artemisinin-based combination therapy
AL	artemether-lumefantrine
AMFm	Affordable Medicine Facility–malaria
ANC	antenatal care
API	annual parasite index
AQ	amodiaquine
AS	artesunate
ASAQ	artesunate-amodiaquine
ASMQ	artesunate-mefloquine
ASSP	artesunate-sulfadoxine-pyrimethamine
CCM	community case management
CFR	case fatality rate
CI	confidence interval
CRS	creditor reporting system
DDT	dichloro-diphenyl-trichloroethane
DHA-PPQ	dihydroartemisinin-piperaquine
G6PD	glucose-6-phosphate dehydrogenase
GDP	gross domestic product
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GMAP	Global Malaria Action Plan
IPTi	intermittent preventive treatment in infants
IPTp	intermittent preventive treatment in pregnancy
IQR	interquartile range
IRS	indoor residual spraying
ITN	insecticide-treated mosquito net
K-13	Kelch 13
LLIN	long-lasting insecticidal net
MDG	Millennium Development Goal
MPAC	Malaria Policy Advisory Committee, WHO
MQ	mefloquine
NMCP	national malaria control programme
OECD	Organisation for Economic Co-operation and Development
P.	*Plasmodium*
*Pf*PR	*P. falciparum* parasite rate
RBM	Roll Back Malaria
RDT	rapid diagnostic test
SAGE	Strategic Advisory Group of Experts on Immunization, WHO
SMC	seasonal malaria chemoprevention
SP	sulfadoxine-pyrimethamine
UI	uncertainty interval
U5MR	under-5 mortality rate
UN	United Nations
WHO	World Health Organization

Abbreviations of WHO regions and offices

AFR	WHO African Region
AFRO	WHO Regional Office for Africa
AMR	WHO Region of the Americas
AMRO	WHO Regional Office for the Americas
EMR	WHO Eastern Mediterranean Region
EMRO	WHO Regional Office for the Eastern Mediterranean
EUR	WHO European Region
EURO	WHO Regional Office for Europe
SEAR	WHO South-East Asia Region
SEARO	WHO Regional Office for South-East Asia
WPR	WHO Western Pacific Region
WPRO	WHO Regional Office for the Western Pacific

Key points

The *World malaria report 2015* assesses global malaria disease trends and changes in the coverage and financing of malaria control programmes between 2000 and 2015. It also summarizes progress towards international targets, and provides regional and country profiles that summarize trends in each WHO region and each country with malaria.

The report is produced with the help of WHO regional and country offices, ministries of health in endemic countries, and a broad range of other partners. The data presented were assembled from the 95 countries and territories with ongoing malaria transmission, and a further six countries that have recently eliminated malaria. Most data are those reported for 2014 and 2015, although in some cases projections have been made into 2015, to assess progress towards targets for 2015.

Trends in infection prevalence, case incidence and mortality rates

Malaria cases. The number of malaria cases globally fell from an estimated 262 million in 2000 (range: 205–316 million), to 214 million in 2015 (range: 149–303 million), a decline of 18%. Most cases in 2015 are estimated to have occurred in the WHO African Region (88%), followed by the WHO South-East Asia Region (10%) and the WHO Eastern Mediterranean Region (2%). The incidence of malaria, which takes into account population growth, is estimated to have decreased by 37% between 2000 and 2015. In total, 57 of 106 countries that had ongoing transmission in 2000 have reduced malaria incidence by >75%. A further 18 countries are estimated to have reduced malaria incidence by 50–75%. Thus, the target of Millennium Development Goal (MDG) 6 "to have halted and begun to reverse the incidence of malaria" (Target 6C) has been achieved.

Malaria deaths in all ages. The number of malaria deaths globally fell from an estimated 839 000 in 2000 (range: 653 000–1.1 million), to 438 000 in 2015 (range: 236 000–635 000), a decline of 48%. Most deaths in 2015 were in the WHO African Region (90%), followed by the WHO South-East Asia Region (7%) and the WHO Eastern Mediterranean Region (2%). The malaria mortality rate, which takes into account population growth, is estimated to have decreased by 60% globally between 2000 and 2015. Thus, substantial progress has been made towards the World Health Assembly target of reducing the malaria burden by 75% by 2015, and the Roll Back Malaria (RBM) Partnership target of reducing deaths to near zero.

Malaria deaths in children under 5 years. The number of malaria deaths in children aged under 5 years is estimated to have decreased from 723 000 globally in 2000 (range: 563 000–948 000) to 306 000 in 2015 (range: 219 000–421 000). The bulk of this decrease occurred in the WHO African Region, where the estimated number of deaths fell from 694 000 in 2000 (range: 569 000–901 000) to 292 000 in 2015 (range: 212 000–384 000). As a result, malaria is no longer the leading cause of death among children in sub-Saharan Africa. In 2015, malaria was the fourth highest cause of death, accounting for 10% of child deaths in sub-Saharan Africa. Reductions in malaria deaths have contributed substantially to progress towards achieving the MDG 4 target of reducing the under-5 mortality rate by two thirds between 1990 and 2015. Nevertheless, malaria remains a major killer of children, particularly in sub-Saharan Africa, taking the life of a child every 2 minutes.

Infections in children aged 2–10 years. The proportion of children infected with malaria parasites has halved in endemic areas of Africa since 2000. Infection prevalence among children aged 2–10 years is estimated to have declined from 33% in 2000 (uncertainty interval [UI]: 31–35%) to 16% in 2015 (UI: 14–19%), with three quarters of this change occurring after 2005.

Cases and deaths averted. It is estimated that a cumulative 1.2 billion fewer malaria cases and 6.2 million fewer malaria deaths occurred globally between 2001 and 2015 than would have been the case had incidence and mortality rates remained unchanged since 2000. In sub-Saharan Africa, it is estimated that malaria control interventions accounted for 70% of the 943 million fewer malaria cases occurring between 2001 and 2015, averting 663 million malaria cases (range: 542–753 million). Of the 663 million cases averted due to malaria control interventions, it is estimated that 69% were averted due to use of insecticide-treated mosquito nets (ITNs) (UI: 63–73%), 21% due to artemisinin-based combination therapy (ACT) (UI: 17–29%) and 10% due to indoor residual spraying (IRS) (UI: 6–14%).

Progress to elimination. An increasing number of countries are moving towards elimination of malaria. Whereas only 13 countries were estimated to have fewer than 1000 malaria cases in 2000, 33 countries are estimated to have achieved this milestone in 2015. Also, in 2014, 16 countries reported zero indigenous cases (Argentina, Armenia, Azerbaijan, Costa Rica, Iraq, Georgia, Kyrgyzstan, Morocco, Oman, Paraguay, Sri Lanka, Tajikistan, Turkey, Turkmenistan, United Arab Emirates and Uzbekistan). Another three countries and territories reported fewer than 10 indigenous cases (Algeria, El Salvador and Mayotte [France]). The WHO European Region reported zero indigenous cases for the first time in 2015, in line with the goal of the Tashkent Declaration to eliminate malaria from the region by 2015.

Coverage of key interventions

Population with access to ITNs. For countries in sub-Saharan Africa, the estimated proportion with access to an ITN in their household was 56% in 2014 (95% confidence interval [CI]: 51–61%) and 67% in 2015 (95% CI: 61–71%). A high proportion (about 82%) of those with access to an ITN sleep under an ITN. Consequently, ensuring access to ITNs has been critical to increasing the proportion of the population sleeping under an ITN.

Population sleeping under ITNs. For countries in sub-Saharan Africa, the estimated proportion sleeping under an ITN was 46% in 2014 (95% CI: 42–50%) and 55% in 2015 (95% CI: 50–58%); the proportion of children aged under 5 years sleeping under an ITN increased from <2% in 2000 to an estimated 68% (95% CI: 61–72%) in 2015. The estimated proportion of the population sleeping under an ITN varies widely among countries, with the median proportion being 74% among the five countries with the highest estimates, and 20% among the five countries with the lowest estimates.

Indoor residual spraying. The proportion of the population at risk that is protected by IRS has declined globally from a peak of 5.7% in 2010 to 3.4% in 2014, with decreases seen in all regions except the WHO Eastern Mediterranean Region. Worldwide, 116 million people were protected by IRS in 2014. Of the 53 countries that reported the type of insecticide sprayed in 2014, 43 had used pyrethroids, with some countries using one or two other insecticide classes also. Combining data on the proportion of the population with access to an ITN in a household and the proportion of people protected by IRS, the estimated proportion of the population for whom vector control had been made available in sub-Saharan Africa increased from 2% in 2000 to 59% in 2014. This still falls short of the universal (i.e. 100%) access target contained in the 2011 update to the *Global Malaria Action Plan* (GMAP).

Chemoprevention in pregnant women. The proportion of pregnant women receiving at least three doses of intermittent preventive treatment in pregnancy (IPTp) has increased since WHO revised its recommendation in 2012. In 2014, an estimated 52% of eligible pregnant women received at least one dose of IPTp, 40% received two or more doses, and 17% received three or more doses. The difference between the proportion of women attending antenatal care (ANC) clinics and the proportion receiving the first and subsequent doses of IPTp suggests that opportunities to deliver IPTp at these clinics were missed. In sub-Saharan Africa, the proportion of women receiving IPTp varied across the continent, with 10 countries reporting more than 60% of pregnant women receiving

one or more doses, and another nine countries reporting more than 80% receiving one or more doses.

Chemoprevention in children. Adoption and implementation of chemoprevention in children has been limited. As of 2014, six of the 15 countries for which WHO recommends seasonal malaria chemoprevention (SMC) – Chad, the Gambia, Guinea, Mali, the Niger and Senegal – had adopted the policy. Additionally, two countries outside the Sahel subregion – Congo and Togo – reported that the policy had been adopted. Only one country, Chad, reported adoption of an intermittent preventive treatment for infants (IPTi) policy in 2014. The malaria vaccine, RTS,S/AS01, received a positive scientific opinion from the European Medicines Agency under Article 58. Pilot implementation of the first malaria vaccine was recommended by WHO's Strategic Advisory Group of Experts on Immunization (SAGE) and the Malaria Policy Advisory Committee (MPAC).

Diagnostic testing. The proportion of suspected malaria cases presenting for care in the public sector that receives a malaria diagnostic test has increased since 2005, from 74% in 2005 to 78% in 2014. The global trend is dominated by countries in South-East Asia, particularly India, which undertakes a high number of diagnostic tests, with more than 100 million performed in 2014. The WHO African Region has had the largest increase in levels of malaria diagnostic testing, from 36% of suspected malaria cases tested in 2005, to 41% in 2010 and 65% in 2014. This increase is primarily due to an increase in the use of rapid diagnostic tests (RDTs). The level of malaria diagnostic testing is lower among febrile children seeking care in the private sector than among those seeking care in the public sector. Among 18 nationally representative surveys conducted in sub-Saharan Africa from 2013 to 2015, the median proportion of febrile children who received a finger or heel stick in public sector health facilities was 53% (interquartile range [IQR]: 35–57%), whereas it was 36% in the formal private sector (IQR: 20–54%) and 6% in the informal private sector (IQR: 3–9%).

Treatment. The proportion of children aged under 5 years with *P. falciparum* malaria and who were treated with an ACT is estimated to have increased from less than 1% in 2005 to 16% in 2014 (range: 12–22%). This proportion falls substantially short of the GMAP target of universal access for malaria case management. A primary reason is that a high proportion of children with fever are not taken for care or use the informal private sector, where they are less likely to obtain ACTs for treatment. While the proportion of children treated with an ACT has increased, the proportion treated with other antimalarial medicines has decreased over time. Hence, an increasing proportion of children with malaria who receive treatment are given an ACT (median 47% across 18 household surveys, 2013–2015) The proportion of ACT antimalarial treatments was lowest when care was sought from informal health-care providers, such as market stallholders or itinerant vendors.

Ratio of treatments to tests. The total number of ACT treatments distributed in the public sector is now fewer than the number of malaria diagnostic tests provided in sub-Saharan Africa (ratio of treatments: tests = 0.88 in 2014). However, there is still scope for further reductions, because the ratio of treatments to tests should approximate the test positivity rate, which is less than 44% across all countries in sub-Saharan Africa.

Costs of malaria control and cost savings

Financing of malaria control programmes. Global financing for malaria control increased from an estimated US$ 960 million in 2005 to US$ 2.5 billion in 2014. International funding for malaria control, which accounted for 78% of malaria programme funding in 2014, decreased from US$ 2.1 billion in 2013 to US$ 1.9 billion in 2014 (i.e. by 8%), primarily due to changes in the funding arrangements of the Global Fund to Fight AIDS, Tuberculosis and Malaria. Most (82%) international funding was directed to the WHO African Region. Domestic funding for national malaria control programmes (NMCPs) was estimated to have increased by 1% between 2013 and 2014, from US$ 544 million to US$ 550 million. Reported NMCP expenditures underestimate total domestic contributions to malaria control, because the estimates are generally restricted to direct expenditures on malaria

control activities by NMCPs, and they exclude health system costs associated with treating patients.

Spending on malaria control commodities. Spending on malaria control commodities (ACTs, ITNs, insecticides and spraying equipment for IRS, and RDTs) is estimated to have increased 40-fold over the past 11 years, from US$ 40 million in 2004 to US$ 1.6 billion in 2014, and accounted for 82% of international malaria spending in 2014. In that year, ITNs were responsible for 63% of total commodity spending, followed by ACT (25%), RDTs (9%) and IRS (3%).

Health system cost savings due to malaria control. Of the cases averted since 2000, it is estimated that 263 million cases would have sought care in the public sector, translating into US$ 900 million saved on malaria case management costs in sub-Saharan Africa between 2001 and 2014. Of the US$ 900 million saved, ITNs/LLINs contributed the largest savings of US$ 610 million (68%), followed by ACTs (US$ 156 million, 17%) and IRS (US$ 134 million, 15%). These estimates consider only savings to health services and exclude savings to households.

Remaining and emerging challenges

Slower declines in malaria in high-burden countries. In 2015, it is estimated that 15 countries accounted for 80% of cases, and 15 countries accounted for 78% of deaths. The global burden of mortality is dominated by countries in sub-Saharan Africa, with the Democratic Republic of the Congo and Nigeria together accounting for more than 35% of the global total of estimated malaria deaths. Decreases in case incidence and mortality rates were slowest in countries that had the largest numbers of malaria cases and deaths in 2000. Reductions in incidence need to be greatly accelerated in these countries if global progress is to improve.

Gaps in intervention coverage. Millions of people still do not receive the services they need. In sub-Saharan Africa in 2014, an estimated 269 million of the 834 million people at risk of malaria lived in households without any ITNs or IRS; 15 million of the 28 million pregnant women at risk did not receive a dose of IPTp; and between 68 and 80 million of the 92 million children with malaria did not receive ACT.

Weaknesses in health systems in countries with the greatest malaria burden. The ability to fill gaps in intervention coverage is constrained by weaknesses in health systems in countries with the greatest malaria burden. The proportion of malaria patients seeking care at public sector health facilities is lower in countries with a high estimated number of malaria cases than in countries with fewer cases. In contrast, the proportion of patients with suspected malaria who seek care in the private sector increases with the estimated number of cases in a country. The ability of malaria endemic countries to strengthen health systems is constrained, because countries with high numbers of malaria cases have lower gross national incomes and lower total domestic government spending per capita than do countries with fewer cases. International spending on malaria control is more evenly distributed in relation to malaria burden, but a large proportion of this funding is spent on commodities and does not address fundamental weaknesses in health systems. Thus, innovative ways of providing services may be required to rapidly expand access to malaria interventions; such means include community-based approaches and engagement with private sector providers.

Economic burden of malaria on health systems. Since 2000, malaria in sub-Saharan Africa is estimated to have cost, on average each year, nearly US$ 300 million for case management alone. Given that malaria is concentrated in countries with comparatively low national incomes, the cost of malaria treatment is disproportionately borne by the most resource-constrained countries.

***P. vivax* malaria.** *P. vivax* malaria is a significant public health issue in many parts of the world. This form of malaria caused an estimated 13.8 million cases globally in 2015, and accounted for about half of all malaria cases outside Africa. Most cases of

P. vivax malaria occurred in the WHO South-East Asia Region (74%), followed by the WHO Eastern Mediterranean Region (11%) and the WHO African Region (10%). More than 80% of *P. vivax* malaria cases are estimated to occur in three countries (Ethiopia, India and Pakistan). *P. vivax* predominates in countries that are prime candidates for malaria elimination, and accounts for more than 70% of cases in countries with fewer than 5000 reported cases each year.

Severe cases and deaths due to *P. vivax* malaria have been reported from all endemic regions. Globally, in 2015 the total number of malaria deaths due to *P. vivax* was estimated to be between 1400 and 14 900, and between 1400 and 12 900 outside sub-Saharan Africa (i.e. 3.5–16% of all malaria deaths occurred outside sub-Saharan Africa). However, information on the population-attributable risks of severe disease and death from *P. vivax* malaria is sparse, and further research is required to refine mortality estimates.

Insecticide resistance. The effectiveness of insecticide-based vector control is threatened by malaria mosquitoes developing resistance to the insecticides used in ITNs and IRS. Since 2010, of 78 countries reporting monitoring data, 60 reported resistance to at least one insecticide in one vector population, and 49 reported resistance to insecticides from two or more insecticide classes. Pyrethroid resistance was detected in all major malaria vectors, with three quarters of countries that monitored this insecticide class in 2014 reporting resistance. However, long-lasting insecticidal nets remain effective despite resistance.

Antimalarial drug resistance. *P. falciparum* resistance to artemisinins has now been detected in five countries in the Greater Mekong subregion: Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam. Despite the observed changes in parasite sensitivity, which manifest in the form of delayed parasite clearance, patients continue to respond to combination treatment, provided the partner drug remains effective. The efficacy of artemether-lumefantrine (AL) in Africa and South America remains high, with treatment failure rates generally below 10%. Failure rates of less than 10% have also been reported for artesunate-amodiaquine (ASAQ) in the 25 countries in Africa in which ASAQ is the first-line or second-line treatment. High treatment failure rates with artesunate-SP (ASSP) have been reported in north-east India (19–25.9%), Somalia (22%) and the Sudan (9.4%). In Somalia, treatment failures are related to resistance to SP, in the absence of artemisinin resistance. For *P. vivax* malaria, at least one true case of chloroquine resistance (with whole blood concentrations of chloroquine plus desethylchloroquine >100 ng/mL on the day of failure) has been confirmed in 10 countries: Bolivia, Brazil, Ethiopia, Indonesia, Malaysia, Myanmar, Papua New Guinea, Peru, the Solomon Islands and Thailand.

Moving forward

To address remaining and emerging challenges, WHO developed the *Global technical strategy for malaria 2016–2030*, which was adopted by the World Health Assembly in May 2015. The strategy sets the most ambitious targets for reductions in malaria cases and deaths since the malaria eradication era began. It was developed in close alignment with the RBM Partnership's *Action and investment to defeat malaria 2016–2030 – for a malaria-free world*, to ensure shared goals and complementarity. The strategy has three main building blocks. Pillar 1 is to ensure universal access to malaria prevention, diagnosis and treatment. Pillar 2 is to accelerate efforts towards elimination of malaria and attainment of malaria-free status. Pillar 3 is to transform malaria surveillance into a core intervention. It is estimated that annual investments in malaria control and elimination will need to increase to US$ 6.4 billion per year by 2020 to meet the first milestone of a 40% reduction in malaria incidence and mortality rates. Annual investments should then further increase to US$ 7.7 billion by 2025 to meet the second milestone of a 75% reduction. To achieve the 90% reduction goal, annual malaria spending will need to reach an estimated US$ 8.7 billion by 2030.

Progress in malaria control and elimination as tracked by MDG and GMAP indicators

MDG indicator	2000	2005	2010	2015	% change
6.6. Incidence rate associated with malaria (per 1000 at risk) and Death rate associated with malaria (per 100 000 at risk)	146 47	134 37	113 26	91 19	-37% -60%
6.7. Proportion of children under 5 sleeping under insecticide-treated mosquito nets[a]	2%	7%	35%	68%	>100%
6.8. Proportion of children under 5 with fever who are treated with appropriate antimalarial drugs[a,b]	<1%	3%	12%	13%	>100%

GMAP indicator	2000	2005	2010	2015	% change
Inpatient malaria deaths per 1000 persons per year	See MDG indicator 6.6				
All-cause under-five mortality rate (per 1000 live births)	76	63	52	43	-43%
% suspected malaria cases that receive a parasitological test[c]	ND	74%	71%	78%	
% children aged under 5 years with fever in the last two weeks who had a finger/heel stick[d]	ND	ND	ND	31%	
% confirmed malaria cases that received first-line antimalarial treatment according to national policy[a,e]	NA	1%	7%	16%	>100%
% receiving first-line treatment among children aged under 5 years with fever in the last 2 weeks who received any antimalarial drugs[a,b]	NA	0%	41%	45%	
Confirmed malaria cases (micropscopy or RDT) per 1000 persons per year	See MDG indicator 6.6				
Parasite prevalence: proportion of children aged 6–59 months with malaria infection[a]	32%	29%	22%	16%	-50%
% population with access to an ITN within their household[a]	2%	7%	36%	67%	>100%
% population who slept under an ITN the previous night[a]	2%	6%	29%	55%	>100%
% population protected by IRS within the last 12 months[c,f,g]	2%	3%	6%	3%	50%
% households with at least one ITN for every two people and/or sprayed by IRS within the last 12 months[a,g]	1%	4%	24%	46%	>100%
% women who received at least three or more doses of IPTp during ANC visits during their last pregnancy[a,c]	ND	ND	5%	17%	>100%
% districts reporting monthly numbers of suspected malaria cases, number of cases receiving a diagnostic test and number of confirmed malaria cases	ND	ND	ND	ND	
Number of new countries in which malaria has been eliminated[h]	2	2	7	16	

ANC, antenatal care; GMAP, Global Malaria Action Plan; IPTp, intermittent preventive treatment in pregnancy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net; MDG, Millennium Development Goal; NA, not applicable; ND, no data; RDT, rapid diagnostic test

[a] Indicator calculated for sub-Saharan Africa only

[b] Refers to artemisinin-based combination therapies

[c] Estimate shown for 2015 is for 2014

[d] Median estimate from most recent household surveys in sub-Saharan Africa for 2013–2015; interquartile range: 19–40%

[e] As data on the first-line treatments adopted by countries are variable, the indicator shown considers *P. falciparum* cases treated with artemisinin-based combination therapies

[f] Estimate does not include countries in the WHO European Region

[g] IRS coverage for 2015 was assumed to be the same as in 2014

[h] Countries with zero indigenous cases for three consecutive years

Avant-propos

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Le présent *Rapport sur le paludisme dans le monde* paraît une année charnière: elle marque à la fois la fin de l'ère des Objectifs du Millénaire pour le Développement et le début d'un nouvel agenda mondial pour la santé humaine et la prospérité, les Objectifs de développement durable. Cette année est également la date-butoir des objectifs spécifiques au paludisme définis par l'Assemblée mondiale de la Santé et d'autres institutions internationales.

Dans ce contexte, notre rapport décrit une baisse considérable du poids du paludisme ces 15 dernières années au niveau mondial. La cible 6C des Objectifs du Millénaire pour le Développement appelait à avoir maîtrisé, d'ici 2015, le paludisme et commencé à inverser la tendance actuelle (de 2000). Notre rapport démontre que cette cible a, de toute évidence, été atteinte. Conformément à l'objectif défini par l'Assemblée mondiale de la Santé, 57 pays ont réduit de 75 % le nombre de cas paludisme au niveau national à l'horizon 2015.

Pour la première fois depuis la publication par l'OMS d'un compte rendu annuel sur cette maladie, la région Europe de l'OMS rapporte zéro cas de paludisme indigène. Ce résultat extraordinaire ne pourra néanmoins être préservé qu'au prix d'un engagement politique sans faille et d'une vigilance constante. Les régions Amériques et Pacifique occidental ont, elles aussi, réalisé des avancées substantielles et fait nettement baisser l'incidence de la maladie.

La région Afrique paie encore le plus lourd tribut au paludisme; elle aussi affiche cependant des progrès impressionnants: depuis 2000, la mortalité due au paludisme y a baissé de 66 % toutes tranches d'âge confondues et de 71 % chez les enfants de moins de 5 ans.

Ces progrès ont été possibles grâce au déploiement massif d'outils préventifs et thérapeutiques efficaces. En Afrique subsaharienne, plus de 50 % de la population dort désormais sous moustiquaire imprégnée d'insecticide, alors que ce chiffre plafonnait à 2 % en 2000. L'intensification rapide des tests de diagnostic et une plus grande disponibilité des médicaments antipaludiques ont permis à une population bien plus nombreuse d'accéder, sans attendre, à un traitement approprié.

Les efforts de prévention et de traitement du paludisme permettent d'économiser des millions de dollars en coûts de santé. Selon les estimations présentées dans ce rapport, la baisse de l'incidence en Afrique subsaharienne

a permis d'économiser US$ 900 millions en coûts de prise en charge des cas au cours des 14 dernières années. Les moustiquaires tiennent une place essentielle dans les économies réalisées, suivies des combinaisons thérapeutiques à base d'artémisinine et de la pulvérisation intradomiciliaire d'insecticides à effet rémanent.

Notre travail est toutefois loin d'être terminé. Au niveau mondial, quelque 3,2 milliards d'habitants sont encore exposés au risque d'infection et, pour la seule année 2015, le nombre de cas de paludisme et de décès associés est respectivement estimé à 214 millions et 438000. Les populations ne bénéficiant pas des services préventifs et thérapeutiques nécessaires se comptent encore par millions.

Près de 80 % des décès dus au paludisme surviennent dans 15 pays seulement, la plupart sur le continent africain. Pris isolément, ces pays enregistrent une baisse de l'incidence du paludisme et de la mortalité associée plus lente que les autres pays endémiques. La faiblesse des systèmes de santé de la majorité de ces pays continue d'entraver les progrès en matière de lutte contre le paludisme.

Pour relever les défis d'aujourd'hui et de demain, l'OMS a élaboré une Stratégie technique mondiale de lutte contre le paludisme 2016-2030. Elle définit des objectifs ambitieux et néanmoins réalisables pour 2030, notamment réduire d'au moins 90 % l'incidence du paludisme et la mortalité associée au niveau mondial par rapport à 2015. Pour ce faire, deux éléments apparaissent nécessaires: un leadership national plus fort et des investissements en faveur de la lutte contre le paludisme au niveau international multipliés par trois d'ici 2030.

Nous sommes aujourd'hui à un tournant. Au cours des 15 dernières années, les progrès accomplis au niveau mondial en matière de contrôle du paludisme sont tout simplement exceptionnels. Ne laissons pas cet élan retomber. Ensemble, nous pouvons transformer la santé, le bien-être et la vie de millions de personnes dans le monde.

Points essentiels

Le *Rapport 2015 sur le paludisme* dans le monde évalue les tendances au niveau mondial relatives à la maladie, ainsi que l'évolution de la couverture et du financement des programmes de lutte contre le paludisme entre 2000 et 2015. Il résume aussi les progrès accomplis sur la voie des objectifs internationaux, et inclut des profils par région et par pays qui décrivent les changements observés à la fois dans chacune des régions de l'OMS et dans chaque pays touché par le paludisme.

Ce rapport est rédigé en collaboration avec les bureaux nationaux et régionaux de l'OMS, les ministères de la Santé des pays endémiques et un grand nombre de partenaires. Les informations qui y sont présentées proviennent des 95 pays et territoires où la transmission du paludisme est active et des six autres pays ayant récemment éliminé le paludisme. La plupart de ces données ont été rapportées pour 2014 et 2015, avec parfois des projections pour 2015 et ce, afin d'évaluer les progrès réalisés par rapport aux objectifs définis pour cette date-butoir.

Tendances relatives à la prévalence de l'infection, à l'incidence et à la mortalité liées au paludisme

Cas de paludisme. Au niveau mondial, la baisse du nombre de cas de paludisme est estimée à 18 %, de 262 millions en 2000 (plage comprise entre 205 et 316 millions) à 214 millions en 2015 (plage comprise entre 149 et 303 millions). En 2015, la plupart des cas ont été enregistrés dans la région Afrique (88 %), loin devant la région Asie du Sud-Est (10 %) et la région Méditerranée orientale (2 %) de l'OMS. Au niveau mondial, l'incidence du paludisme, qui tient compte de la croissance démographique, aurait diminué de 37 % entre 2000 et 2015. Au total, 57 des 106 pays où la transmission était active en 2000 ont réduit l'incidence de la maladie de plus de 75 %. D'après les estimations, 18 autres pays ont également fait baisser l'incidence du paludisme de 50 % à 75 %. Par conséquent, la cible de l'Objectif du Millénaire pour le Développement 6 (OMD 6C) visant à « avoir maîtrisé le paludisme d'ici à 2015 et commencé à inverser la tendance actuelle » a été atteinte.

Décès dus au paludisme toutes tranches d'âge confondues. Au niveau mondial, la baisse du nombre de décès dus au paludisme est estimée à 48 %, de 839 000 décès en 2000 (plage comprise entre 653 000 et 1,1 million) à 438 000 en 2015 (plage comprise entre 236 000 et 635 000). En 2015, la plupart de ces décès sont survenus dans la région Afrique (90 %), loin devant la région Asie du Sud-Est (7 %) et la région Méditerranée orientale (2 %) de l'OMS. Au niveau mondial, la mortalité liée au paludisme, qui tient compte de la croissance démographique, aurait diminué de 60 % entre 2000 et 2015. Des progrès considérables ont donc été accomplis sur la voie des objectifs respectivement définis par l'Assemblée mondiale de la Santé (réduire de 75 % la charge du paludisme à l'horizon 2015) et par le Partenariat Roll Back Malaria (réduire pratiquement à zéro le nombre de décès dus au paludisme).

Décès dus au paludisme chez les enfants de moins de 5 ans. Au niveau mondial, le nombre de décès dus au paludisme chez les enfants de moins de 5 ans a diminué de 723 000 en 2000 (plage comprise entre 563 000 et 948 000) à 306 000 en 2015 (plage comprise entre 219 000 et 421 000). C'est dans la région Afrique de l'OMS que cette baisse est la plus prononcée avec 694 000 décès en 2000 (plage comprise entre 569 000 et 901 000) contre 292 000 en 2015 (plage comprise entre 212 000 et 384 000). Alors que le paludisme était la première cause de mortalité infantile en Afrique subsaharienne, il apparaît au quatrième rang en 2015 avec 10 % des décès à l'échelle du continent. La baisse de la mortalité due au paludisme a largement contribué aux progrès par rapport à l'OMD 4, à savoir réduire la mortalité chez les enfants de moins de 5 ans de deux

tiers entre 1990 et 2015. Le paludisme reste néanmoins l'une des principales causes de mortalité infantile, surtout en Afrique subsaharienne, tuant un enfant toutes les deux minutes.

Infections palustres chez les enfants âgés de 2 à 10 ans. Depuis 2000, le pourcentage d'infections palustres a diminué de moitié chez les enfants issus des régions endémiques d'Afrique. La prévalence parasitaire dans cette tranche d'âge est passée de 33 % en 2000 (incertitude comprise entre 31 % et 35 %) à 16 % en 2015 (incertitude: 14 %–19 %), avec les trois-quarts de cette baisse observée après 2005.

Cas de paludisme et décès évités. Au total, 1,2 milliard de cas de paludisme et 6,2 millions de décès associés ont été évités au niveau mondial entre 2001 et 2015, par rapport aux chiffres que nous aurions enregistrés si les taux d'incidence et de mortalité étaient restés inchangés depuis 2000. En Afrique subsaharienne, les interventions antipaludiques expliquent 70 % des 943 millions de cas de paludisme en moins entre 2001 et 2015, soit un total de 663 millions de cas évités (plage comprise entre 542 et 753 millions). Sur ces 663 millions de cas évités par le biais des interventions antipaludiques, 69 % l'ont été grâce à l'utilisation de moustiquaires imprégnées d'insecticide (MII) (incertitude: 63 %–73 %), 21 % grâce aux combinaisons thérapeutiques à base d'artémisinine (ACT) (incertitude: 17 %–29 %) et 10 % grâce aux pulvérisations intradomiciliaires d'insecticides à effet rémanent (PID) (incertitude: 6 %–14 %).

Progrès vers l'élimination. De plus en plus de pays progressent vers l'élimination du paludisme. Alors que seuls 13 pays rapportaient moins de 1 000 cas de paludisme en 2000, ils sont 33 en 2015. Par ailleurs, en 2014, 16 pays ont récensé zéro cas de paludisme indigène (Argentine, Arménie, Azerbaïdjan, Costa Rica, Émirats arabes unis, Géorgie, Iraq, Kirghizistan, Maroc, Oman, Ouzbékistan, Paraguay, Sri Lanka, Tadjikistan, Turquie et Turkménistan). Trois autres pays et territoires ont rapporté moins de dix cas de paludisme indigène (Algérie, El Salvador et Mayotte [France]). La région Europe de l'OMS n'a signalé aucun cas de paludisme indigène pour la première fois en 2015, conformément à l'objectif de la Déclaration de Tachkent visant à éliminer le paludisme dans toute la région d'ici 2015.

Couverture des interventions essentielles

Population ayant accès à une MII. Dans les pays d'Afrique subsaharienne, le pourcentage de la population ayant accès à une MII au sein du foyer a augmenté de 56 % en 2014 (intervalle de confiance [IC] de 95 % : 51 %–61 %) à 67 % en 2015 (IC de 95 % : 61 %–71 %). Une grande majorité (82 %) de ceux qui ont accès à une moustiquaire l'utilisent ; il est donc essentiel d'augmenter l'accès aux MII pour obtenir des taux d'utilisation élevés.

Population dormant sous MII. Dans les pays d'Afrique subsaharienne, le pourcentage de la population dormant sous MII était estimé à 46 % en 2014 (IC de 95 % : 42 %–50 %) et à 55 % en 2015 (IC de 95 % : 50 %–58 %). Chez les enfants de moins de 5 ans, le taux d'utilisation est passé de moins de 2 % en 2000 à 68 % (IC de 95 % : 61 %–72 %) en 2015. Le pourcentage de la population dormant sous MII varie fortement d'un pays à l'autre, le pourcentage médian s'élevant à 74 % dans les cinq pays aux estimations les plus élevées, et à 20 % dans les cinq pays aux estimations les plus basses.

Pulvérisation intradomiciliaire d'insecticides à effet rémanent. Le pourcentage de la population à risque protégée par PID a globalement diminué, passant d'un pic de 5,7 % en 2010 à 3,4 % en 2014, avec un recul observé dans toutes les régions, hormis la région Méditerranée orientale de l'OMS. Au niveau mondial, la population protégée par PID a été estimée à 116 millions en 2014. Sur les 53 pays ayant indiqué le type d'insecticide(s) utilisé(s) pour la PID en 2014, 43 ont eu recours aux pyréthoïdes, en complément d'une ou deux autres classes d'insecticides pour certains de ces pays. Compte tenu du pourcentage de la population ayant accès à une MII au sein du foyer et du pourcentage de la population protégée par PID, le pourcentage de la population bénéficiant d'une intervention de lutte antivectorielle en Afrique subsaharienne a augmenté de 2 % en 2000 à 59 % en 2014. Ce taux reste cependant en deçà de l'objectif d'accès universel

(100 %) défini dans les cibles actualisées du *Plan d'action mondial contre le paludisme* (GMAP) en 2011.

Chimioprévention chez les femmes enceintes. Le pourcentage de femmes enceintes ayant reçu au moins trois doses de traitement préventif intermittent pendant la grossesse (TPIp) a augmenté depuis que l'OMS a mis à jour ses recommandations en 2012. En 2014, 52 % des femmes enceintes pouvant bénéficier du TPIp ont reçu au moins une dose, 40 % en ont reçu deux ou plus, et 17 % au moins trois. La différence entre le pourcentage de femmes se présentant pour une consultation prénatale (CPN) dans un établissement de santé et le pourcentage recevant une ou plusieurs doses de TPIp laisse penser que les possibilités d'administration du TPIp ne sont pas toutes exploitées. Le pourcentage de femmes enceintes bénéficiant du TPIp varie sur le continent africain : dans 10 pays, plus de 60 % des femmes enceintes ont reçu au moins une dose, alors que dans 9 autres pays, elles sont plus de 80 %.

Chimioprévention chez les enfants. L'adoption et la mise en œuvre de la chimioprévention du paludisme saisonnier (CPS) chez les enfants sont limitées. En 2014, sur les 15 pays auxquels l'OMS recommandait d'adopter la CPS, six seulement l'ont fait: la Gambie, la Guinée, le Mali, le Niger, le Sénégal et le Tchad. Deux autres pays en dehors de la sous-région du Sahel, le Congo et le Togo, ont indiqué avoir également édicté cette politique. Un seul pays, le Tchad, a indiqué avoir adopté une politique de traitement préventif intermittent chez le nourrisson (TPIi) en 2014. Le vaccin contre le paludisme, RTS,S/AS01, a reçu un avis scientifique positif de la part de l'Agence européenne des médicaments au titre de l'article 58. Le Groupe stratégique consultatif d'experts (SAGE) sur la vaccination et le Comité de pilotage de la politique de lutte antipaludique (MPAC) de l'OMS ont donc recommandé la mise en œuvre de projets pilotes autour de ce premier vaccin antipaludique.

Tests de diagnostic. Le pourcentage de cas suspectés de paludisme sollicitant un traitement dans le secteur public et soumis à un test de diagnostic du paludisme a augmenté de façon constante, passant de 74 % en 2005 à 78 % en 2014. Cette tendance mondiale est plus prononcée dans les pays d'Asie du Sud-Est, notamment l'Inde, où un nombre très important de tests de diagnostic rapide (TDR) sont utilisés (plus de 100 millions en 2014). La région Afrique de l'OMS a connu la hausse la plus forte, avec 36 % de cas suspectés ayant été soumis à un test en 2005, 41 % en 2010, puis 65 % en 2014. Cette progression est principalement due à une plus grande utilisation des TDR. L'utilisation des TDR est plus faible chez les enfants fiévreux sollicitant des soins dans le secteur privé que chez ceux visitant le secteur public. Sur 18 enquêtes menées en Afrique subsaharienne entre 2013 et 2015 et représentatives au niveau national, le pourcentage médian d'enfants fiévreux ayant subi un prélèvement sanguin au doigt/talon à des fins de dépistage du paludisme dans le secteur public était de 53 % (écart interquartile : 35 %–57 %), alors qu'il s'élevait à 36 % dans le secteur privé formel (écart interquartile : 20 %–54 %) et à 6 % dans le secteur privé informel (écart interquartile : 3 %–9 %).

Traitement. Le pourcentage d'enfants de moins de 5 ans atteints de paludisme à *P. falciparum* et traités par ACT a augmenté, passant de moins de 1 % en 2005 à 16 % en 2014 (plage comprise entre 12 % et 22 %), loin de l'objectif d'accès universel au traitement défini par le GMAP. Ceci s'explique notamment par le pourcentage important d'enfants fiévreux qui ne sollicitent pas de soins ou qui font appel au service privé informel, là ils sont moins susceptibles d'obtenir un traitement par ACT. Alors que le pourcentage d'enfants traités par ACT a augmenté, celui des enfants traités par d'autres médicaments antipaludiques a diminué. Tout naturellement, le taux d'utilisation des ACT augmente parmi les enfants recevant un traitement antipaludique (valeur médiane de 47 % sur la base de 18 enquêtes réalisées auprès des ménages entre 2013 et 2015). La part des traitements par ACT est plus faible lorsque les soins ont été sollicités auprès des prestataires de santé du secteur informel, tels que sur les étals de marché ou auprès des vendeurs itinérants.

Ratio entre traitements et tests. Le nombre total de traitements par ACT distribués dans le secteur public est désormais inférieur au nombre de tests de diagnostic fournis en Afrique subsaharienne (le ratio entre traitements et tests s'élève à 0,88 en 2014).

Néanmoins, ce ratio peut encore être abaissé au niveau du taux de positivité des tests, qui est inférieur à 44 % en Afrique subsaharienne.

Coûts de la lutte contre le paludisme et économies

Financement des programmes de lutte contre le paludisme. Selon les estimations, le financement mondial de la lutte contre le paludisme a augmenté de US$ 960 millions en 2005 à US$ 2,5 milliards en 2014. Les investissements internationaux, qui ont représenté 78 % du financement des programmes antipaludiques en 2014, ont baissé de US$ 2,1 milliards en 2013 à US$ 1,9 milliard en 2014 (-8 %), principalement en raison des changements des procédures de financement du Fonds mondial de lutte contre le sida, la tuberculose et le paludisme (Fonds mondial). La plupart des fonds internationaux (82 %) ont été dirigés vers la région Afrique de l'OMS. Le financement des programmes nationaux de lutte contre le paludisme (PNLP) par les différents gouvernements est estimé en hausse de 1 % entre 2013 et 2014 (respectivement US$ 544 millions et US$ 550 millions). Les dépenses rapportées par les PNLP sous-estiment le niveau des financements nationaux en faveur du contrôle du paludisme, car les estimations se limitent généralement aux dépenses directes liées aux activités antipaludiques menées par les PNLP, sans tenir compte des coûts de traitement des patients supportés par les systèmes de santé.

Dépenses liées aux produits antipaludiques. Les dépenses en produits antipaludiques (ACT, MII, insecticides et équipement de pulvérisation, et TDR) ont été multipliées par 40 au cours de ces 11 dernières années, passant de US$ 40 millions en 2004 à US$ 1,6 milliard en 2014 pour atteindre 82 % des dépenses mondiales consacrées à la lutte contre le paludisme. En 2014, les MII ont représenté 63 % du total des dépenses en produits antipaludiques, suivies des ACT (25 %), des TDR (9 %) et de la PID (3 %).

Économies sur le système de santé réalisées grâce à la lutte contre le paludisme. Sur le nombre de cas évités depuis 2000, il est estimé que 263 millions auraient sollicité des soins dans le secteur public. Les économies en termes de prise en charge thérapeutique en Afrique subsaharienne s'élèveraient à US$ 900 millions entre 2001 et 2014, la plupart réalisées grâce à l'utilisation des MII/MILD (68 %, soit US$ 610 millions), puis des ACT (17 %, soit US$ 156 millions) puis de la PID (15 %, soit US$ 134 millions). Ces estimations ne tiennent compte que des coûts qui auraient été imputés aux services de santé ; elles excluent les économies réalisées par les ménages.

Défis d'aujourd'hui et de demain

Les progrès en matière de lutte contre le paludisme sont plus limités dans les pays les plus durement touchés. En 2015, 80 % des cas de paludisme étaient concentrés dans 15 pays et 78 % des décès étaient enregistrés parmi une liste de pays tout aussi restreinte. Les pays d'Afrique subsaharienne paient le plus lourd tribut à la maladie, notamment la République démocratique du Congo et le Nigéria, qui représentent à eux seuls plus de 35 % des décès dus au paludisme dans le monde. La baisse de l'incidence du paludisme et de la mortalité associée a été plus lente dans les pays où les cas et les décès étaient les plus nombreux en 2000. Pour réaliser de nouvelles avancées en matière de contrôle et d'élimination au niveau mondial, l'incidence du paludisme devra baisser de façon substantielle dans ces pays.

Disparités en matière de couverture des interventions. Les populations qui ne bénéficient pas des services nécessaires se comptent encore par millions. Il a été estimé qu'en 2014, sur une population totale à risque de 834 millions en Afrique subsaharienne, 269 millions de personnes vivaient dans une habitation sans moustiquaire ou non protégée par PID ; 15 des 28 millions de femmes enceintes exposées au risque de paludisme n'ont reçu aucune dose de TPIp ; et, sur les 92 millions d'enfants atteints de paludisme, entre 68 et 80 millions n'ont pas été traités par ACT.

Faiblesse des systèmes de santé dans les pays où le paludisme sévit le plus. La capacité à répondre aux besoins de couverture des interventions est limitée par la faiblesse des systèmes de santé dans les pays les plus durement touchés par le paludisme. Le pourcentage de patients atteints de paludisme se présentant dans des établissements de soins publics est plus faible dans les pays où les cas sont les plus nombreux. En revanche, plus l'incidence du paludisme est forte, plus le pourcentage de patients suspectés de paludisme et sollicitant des soins dans le secteur privé augmente. La capacité des pays endémiques à renforcer leurs systèmes de santé est mise à mal, car les pays recensant le plus de cas de paludisme ont en effet un revenu national brut et un niveau de dépenses publiques par habitant inférieurs aux autres. Les dépenses internationales pour lutter contre le paludisme sont réparties de façon plus équitable par rapport au poids du paludisme, mais une large part des financements est consacrée aux produits antipaludiques et ne compense donc pas la faiblesse fondamentale des systèmes de santé. Par conséquent, la prestation de services devra aussi se faire par des méthodes novatrices, notamment via des approches communautaires ou l'engagement des prestataires privés, si l'on veut rapidement étendre l'accès aux interventions antipaludiques.

Poids économique du paludisme sur les systèmes de santé. Depuis 2000, le seul coût de la prise en charge des cas de paludisme en Afrique subsaharienne est estimé à environ US$ 300 millions. Comme le paludisme se concentre dans des pays où le revenu national est relativement faible, le coût des traitements antipaludiques apparaît encore plus difficile à absorber dans les pays les plus pauvres.

Paludisme à *P. vivax*. Le paludisme à *P. vivax* est un problème de santé publique important dans de nombreuses régions du monde. En 2015, cette forme de paludisme est responsable de 13,8 millions de cas dans le monde et de la moitié des cas de paludisme hors Afrique. La plupart des cas de paludisme à *P. vivax* ont été recensés dans la région Asie du Sud-Est (74 %), loin devant la région Méditerranée orientale (11 %) et la région Afrique (10 %) de l'OMS. Plus de 80 % des cas de paludisme à *P. vivax* sont enregistrés dans trois pays (Éthiopie, Inde et Pakistan). *P. vivax* prédomine dans les pays engagés sur la voie de l'élimination du paludisme, et ce parasite est à l'origine de plus de 70 % des infections palustres dans les pays rapportant moins de 5 000 cas par an.

Des cas graves et des décès dus au paludisme à *P. vivax* ont été rapportés dans toutes les régions endémiques. En 2015, le nombre de décès dus au paludisme à *P. vivax* est estimé à entre 1 400 et 14 900 au niveau mondial, dont 1 400 à 12 900 en dehors de l'Afrique subsaharienne (i. e. entre 3,5 % et 16 % des décès dus au paludisme ont été enregistrés hors Afrique subsaharienne). Il existe néanmoins peu d'informations sur le risque attribuable de paludisme à *P. vivax* grave et de décès associé pour une population donnée. Des travaux de recherche sont donc nécessaires pour affiner les estimations de mortalité.

Résistance aux insecticides. L'efficacité de la lutte antivectorielle basée sur les insecticides est menacée par les moustiques porteurs du paludisme, qui développent une résistance aux insecticides utilisés pour les MII et la PID. Depuis 2010, sur les 78 pays fournissant des données de suivi, 60 ont signalé la résistance d'une population de vecteurs à au moins un insecticide, et 49 ont rapporté une résistance à au moins deux classes d'insecticides. La résistance aux pyréthoïdes a été détectée chez tous les principaux vecteurs du paludisme, et les trois quarts des pays ayant effectué un suivi de cette classe d'insecticides en 2014 ont fait état d'une résistance. Néanmoins, et malgré cette résistance, les moustiquaires imprégnées d'insecticide à longue durée (MILD) restent efficaces.

Résistance aux médicaments antipaludiques. La résistance du parasite *P. falciparum* à l'artémisinine a été détectée dans cinq pays de la sous-région du Grand Mékong : le Cambodge, le Myanmar, la République démocratique populaire lao, la Thaïlande et le Viet Nam. Malgré les changements observés en termes de sensibilité des parasites, leur processus d'élimination est en effet plus long, les patients continuent de répondre aux combinaisons thérapeutiques, dans la mesure où le médicament associé conserve son efficacité. L'artéméther-luméfantrine (AL) reste très efficace en Afrique et en Amérique

du Sud, avec un taux d'échec du traitement généralement inférieur à 10 %. Des taux d'échec inférieurs à 10 % ont également été rapportés pour l'artésunate-amodiaquine (ASAQ) dans les 25 pays d'Afrique où l'ASAQ est utilisé comme traitement de première ou seconde intention. La combinaison artésunate-SP (ASSP) a connu un fort taux d'échec du traitement au nord-est de l'Inde (entre 19 % et 25,9 %), en Somalie (22 %) et au Soudan (9,4 %). En Somalie, l'échec du traitement est lié à la résistance à la SP, étant donné l'absence de résistance à l'artémisinine. Pour le paludisme à *P. vivax*, au moins un cas avéré de résistance à la chloroquine (avec des concentrations sanguines de chloroquine plus déséthylchloroquine supérieures à 100 ng/mL le jour de l'échec thérapeutique) a été confirmé dans 10 pays: Bolivie, Brésil, Éthiopie, Îles Salomon, Indonésie, Malaisie, Myanmar, Papouasie-Nouvelle-Guinée, Pérou et Thaïlande.

Prochaines étapes

Pour relever les défis d'aujourd'hui et ceux à venir, l'OMS a développé la *Stratégie technique mondiale de lutte contre le paludisme 2016-2030*, qui a été adoptée par l'Assemblée mondiale de la Santé en mai 2015. Cette stratégie définit les objectifs les plus ambitieux depuis l'ère de l'éradication du paludisme en termes de baisse du nombre de cas et de décès associés. Elle a été élaborée parallèlement à la rédaction par le Partenariat RBM du plan *Action et Investissement pour vaincre le paludisme 2016-2030 (AIM) — pour un monde sans paludisme* et ce, afin d'assurer une complémentarité des deux documents et de définir des objectifs communs. Cette stratégie s'articule autour de trois piliers : le pilier 1 vise à garantir l'accès universel à la prévention, au diagnostic et au traitement du paludisme ; le pilier 2 vise à accélérer les efforts vers l'élimination et vers l'obtention du statut exempt de paludisme ; et le pilier 3 consiste à faire de la surveillance du paludisme une intervention de base. Les investissements nécessaires pour le contrôle et l'élimination du paludisme sont estimés à US$ 6,4 milliards par an d'ici 2020 pour le premier objectif intermédiaire, à savoir réduire de 40 % l'incidence du paludisme et la mortalité associée. Ces investissements devront ensuite passer à US$ 7,7 milliards par an d'ici 2025 pour atteindre le deuxième objectif intermédiaire, à savoir une baisse de 75 %. Enfin, pour atteindre l'objectif de diminution de 90 % de l'incidence et du taux de mortalité associée, les dépenses annuelles pour lutter contre le paludisme devront atteindre US$ 8,7 milliards d'ici 2030.

Progrès sur la voie du contrôle et de l'élimination du paludisme, selon les indicateurs des OMD et du GMAP

Indicateurs des OMD	2000	2005	2010	2015	Variation (%)
6.6. Incidence du paludisme (pour 1 000 habitants à risque) et	146	134	113	91	-37 %
Taux de mortalité due à cette maladie (pour 100 000 habitants à risque)	47	37	26	19	-60 %
6.7. Proportion d'enfants de moins de 5 ans dormant sous des moustiquaires imprégnées d'insecticide[a]	2 %	7 %	35 %	68 %	> 100 %
6.8. Proportion d'enfants de moins de 5 ans atteints de fièvre traités avec des médicaments antipaludiques appropriés[a,b]	< 1 %	3 %	12 %	13 %	> 100 %

Indicateurs du GMAP	2000	2005	2010	2015	Variation (%)
Décès dus au paludisme parmi les malades hospitalisés, pour 1 000 personnes/an	Cf. indicateur 6.6 des OMD				
Taux de mortalité toutes causes confondues chez les enfants de moins de 5 ans (pour 1 000 naissances vivantes)	76	63	52	43	-43 %
% de cas suspectés de paludisme ayant subi un test parasitologique[c]	ND	74 %	71 %	78 %	
% d'enfants de moins de 5 ans ayant eu de la fièvre dans les deux semaines précédant l'enquête et ayant subi un prélèvement sanguin au doigt/talon pour le dépistage du paludisme[d]	ND	ND	ND	31 %	
% de cas de paludisme confirmés ayant pris l'antipaludique de première intention, conformément à la politique nationale[a,e]	NA	1 %	7 %	16 %	> 100 %
% d'enfants de moins de 5 ans ayant eu de la fièvre dans les deux semaines précédant l'enquête et ayant pris l'antipaludique de première intention[a,b]	NA	0 %	41 %	45 %	
Cas de paludisme confirmés (par microscopie ou TDR) pour 1 000 personnes/an	Cf. indicateur 6.6 des OMD				
Prévalence parasitaire : pourcentage d'enfants âgés de 6 à 59 mois souffrant d'une infection palustre[a]	32 %	29 %	22 %	16 %	-50 %
% de la population ayant accès à une MII au sein du foyer[a]	2 %	7 %	36 %	67 %	> 100 %
% de la population ayant dormi sous MII la nuit précédant l'enquête[a]	2 %	6 %	29 %	55 %	> 100 %
% de la population protégée par PID au cours des 12 mois précédant l'enquête[c,f,g]	2 %	3 %	6 %	3 %	50 %
% de ménages possédant au moins une MII pour deux membres du foyer et/ou ayant bénéficié d'une PID au cours des 12 mois précédant l'enquête[a,g]	1 %	4 %	24 %	46 %	> 100 %
% de femmes ayant reçu au moins trois doses de TPIp en consultations prénatales au cours de leur dernière grossesse[a,c]	ND	ND	5 %	17 %	> 100 %
% de districts rapportant chaque mois le nombre de cas suspectés de paludisme, le nombre de patients soumis à un test de diagnostic et le nombre de cas confirmés	ND	ND	ND	ND	
Nombre de pays supplémentaires ayant éliminé le paludisme[h]	2	2	7	16	

MII, moustiquaire imprégnée d'insecticide; NA, non applicable; ND, données non disponibles; OMD, Objectifs du Millénaire pour le Développement; PID, pulvérisation intradomiciliaire d'insecticides à effet rémanent; TDR, test de diagnostic rapide; TPIp, traitement préventif intermittent pendant la grossesse.

[a] Indicateur calculé pour l'Afrique subsaharienne uniquement.
[b] Combinaisons thérapeutiques à base d'artémisinine.
[c] Estimation de 2014 utilisée pour 2015.
[d] Estimation médiane des enquêtes les plus récentes réalisées auprès des ménages entre 2013 et 2015 en Afrique subsaharienne, écart interquartile de 19 % à 40 %.
[e] Comme les données relatives aux traitements de première intention adoptés par les pays sont variables, cet indicateur ne concerne que les cas de paludisme à *P. falciparum* traités par combinaisons thérapeutiques à base d'artémisinine.
[f] Estimation ne tenant pas compte des pays de la région Europe de l'OMS.
[g] Couverture en PID de 2014 utilisée pour 2015.
[h] Pays recensant zéro cas indigène trois années consécutives.

Prefacio

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El *Informe Mundial del Paludismo* se lanza en un año clave: el 2015 marca el fin de la era de los Objetivos de Desarrollo del Milenio y el inicio de una nueva agenda global para la salud y la prosperidad humana con los Objetivos de Desarrollo Sostenible. También año clave para los objetivos específicos para el paludismo establecidos por la Asamblea Mundial de la Salud, y otras instituciones a nivel mundial.

En este contexto, nuestro informe de seguimiento registra un descenso notable en la carga mundial del paludismo en los últimos 15 años. La meta 6C de los Objetivos de Desarrollo del Milenio hacía un llamado a detener y comenzar a reducir, para el año 2015, la incidencia del paludismo. El informe muestra –indudablemente– que este objetivo se ha alcanzado. Cincuenta y siete países han reducido su incidencia de casos en más de un 75%, cumpliendo así con el objetivo para el año 2015 de la Asamblea Mundial de la Salud.

Por primera vez, desde que la OMS estableciese un sistema de registro, no se ha reportado ningún caso autóctono de paludismo en la región Europea. Esto es un logro extraordinario, que sólo puede mantenerse a través de un compromiso político firme y una vigilancia entomológica constante. La región de las Américas y la región del Pacífico Occidental también han alcanzado reducciones substanciales en los casos de paludismo.

La región Africana continúa padeciendo la carga de paludismo más pesada. Sin embargo, se han alcanzado logros importantes: desde el año 2000, la tasa de mortalidad por paludismo ha disminuido un 66% en todos los grupos de edad y un 71% en los niños menores de 5 años.

Este progreso ha sido posible gracias a la expansión masiva de herramientas efectivas para la prevención y el tratamiento del paludismo. En el África subsahariana, más de la mitad de la población duerme actualmente bajo mosquiteros tratados con insecticidas, en comparación al 2% que lo hacía en el año 2000. La rápida expansión de las pruebas de diagnóstico y en lo posible de medicamentos antipalúdicos, han permitido que muchas más personas tengan acceso a un tratamiento oportuno y adecuado.

Los esfuerzos en la prevención y el tratamiento han ahorrado millones de dólares en costos sanitarios. Las nuevas estimaciones en nuestro informe muestran que debido a una reducción en casos de paludismo en el África subsahariana se ha ahorrado un costo estimado de US$900 millones en los últimos 14 años. Los mosquiteros tratados con insecticidas han sido las herramientas que han originado los ahorros más importantes, seguidos por los tratamientos combinados basados en artemisininas y por los rociamientos intradomiciliarios.

Sin embargo, nuestra labor no ha terminado. Alrededor de 3.2 millones de personas están en riesgo de contraer la enfermedad. Sólo en el 2015, se estimaron 214 millones de casos nuevos y 438 000 muertes por paludismo. Millones de personas todavía no tienen acceso a los servicios necesarios para prevenir y tratar el paludismo.

Aproximadamente, el 80% de las muertes por paludismo se concentran en sólo 15 países, principalmente de África. En conjunto, estos países con alto nivel de transmisión de la enfermedad han alcanzado disminuciones más lentas que el promedio en cuanto a la incidencia y mortalidad. En la mayoría de estos países, la debilitada infraestructura de los sistemas sanitarios sigue impidiendo el progreso hacia el control del paludismo.

Para hacer frente a estos y otros desafíos, la OMS ha desarrollado la *Estrategia Técnica Mundial para la Malaria 2016-2030*. Dicha estrategia determina unos objetivos ambiciosos, pero alcanzables, para el año 2030, donde incluye una reducción de al menos un 90% en la incidencia y la mortalidad por paludismo a nivel mundial. El logro de estos objetivos requerirá un fuerte compromiso político y liderazgo por parte de los países, así como una triplicación en la inversión mundial para el control del paludismo.

Hemos llegado a un momento crucial. El progreso mundial para el control del paludismo en los últimos 15 años es más que extraordinario. No perdamos el impulso. Juntos, podemos transformar la salud, el bienestar y la vida de millones de personas en todo el mundo.

Puntos clave

El *Informe Mundial sobre el Paludismo 2015* evalúa a nivel mundial las tendencias y los cambios en la cobertura así como el financiamiento de los programas de control del paludismo entre los años 2000 y 2015. De esta manera, sintetiza los logros alcanzados respecto a los objetivos internacionales, y proporciona los perfiles regionales y nacionales que resumen las tendencias del paludismo en cada región de la OMS y en cada país endémico.

El informe se ha elaborado con la ayuda de las oficinas regionales y nacionales de la OMS, los ministerios de salud de los países endémicos, y una amplia variedad de colaboradores. Se presentan los datos recopilados de los 95 países y territorios con transmisión activa del paludismo, y de otros seis países que han eliminado la enfermedad recientemente. La mayoría de los datos presentados son los datos reportados para el año 2014 y 2015, si bien en algunos casos se han realizado proyecciones para el 2015, para poder evaluar el progreso hacia los objetivos del mismo año.

Tendencias en la prevalencia de infección, incidencia de casos y tasas de mortalidad

Casos de paludismo. El número estimado de casos de paludismo a nivel mundial descendió de unos 262 millones en el año 2000 (rango: 205-316 millones) a 214 millones en el año 2015 (rango: 149-303 millones). Se estima que la mayoría de los casos en el año 2015 han ocurrido en la Región de África de la OMS (88%), seguida de la Región de Asia sudoriental (10%) y la Región del Mediterráneo Oriental (2%). Teniendo en cuenta el crecimiento demográfico, se estima que la incidencia del paludismo ha disminuido un 37% entre los años 2000 y 2015. En total, 57 de los 106 países que tenían transmisión activa en el año 2000 han reducido la incidencia del paludismo en más del 75%. Otros 18 países estiman haber reducido la incidencia entre el 50 y el 75%. En consecuencia, la Meta 6C "haber detenido y comenzado a reducir la incidencia de la malaria" de los Objetivos de Desarrollo del Milenio se ha alcanzado.

Muertes por paludismo en todas las edades. El número de muertes por paludismo a nivel mundial disminuyó de 839 000 muertes estimadas en el año 2000 (rango: 653 000 a 1.1 millones), a 438 000 en el 2015 (rango: 236 000 a 635 000), figurando un descenso del 48%. La mayoría de las muertes en el año 2015 ocurrieron en la Región de África (90%), seguida de la Región de Asia sudoriental (7%) y la Región del Mediterráneo Oriental (2%). Teniendo en cuenta el crecimiento demográfico, se estima que la tasa de mortalidad por paludismo ha disminuido en un 60% a nivel mundial entre el año 2000 y 2015. Por lo tanto, se han logrado avances sustanciales hacia el objetivo principal de la Asamblea Mundial de la Salud en reducir la carga del paludismo a un 75% en el año 2015, y de la misma manera con el objetivo de la Alianza para Hacer Retroceder la Malaria (RBM, por sus siglas en inglés *Roll Back Malaria*) de reducir las muertes por paludismo cerca de cero.

Muertes por paludismo en niños menores de 5 años. Se estima que el número de muertes por paludismo en niños menores de 5 años ha disminuido a nivel mundial de 723 000 en el año 2000 (rango: 563 000 a 948 000) a 306 000 en el 2015 (rango: 219 000 a 421 000). La mayor parte de esta disminución se produjo en la Región de África de la OMS, dónde el número estimado de víctimas disminuyó de 694 000 en el 2000 (rango: 569 000 a 901 000) a 292 000 en el 2015 (rango: 212 000 a 384 000). Como consecuencia, el paludismo ya no es la principal causa de muerte en los niños de África subsahariana. En el año 2015, el paludismo fue la cuarta causa principal de muerte, responsable del 10% de las muertes infantiles en dicha región. La reducción en

la mortalidad por paludismo ha contribuido sustancialmente al progreso hacia el logro de la Meta 4 de los ODM para reducir la tasa de mortalidad en menores de 5 años en dos tercios entre los años 1990 y 2015. No obstante, el paludismo sigue siendo una de las principales causas de mortalidad infantil, sobre todo en el África subsahariana, acabando con la vida de un niño cada 2 minutos.

Infecciones en niños de 2-10 años. Desde el año 2000, la proporción de niños infectados con parásitos del paludismo se ha visto reducido a la mitad en áreas endémicas de África. Se estima que el riesgo de infección entre los niños de 2-10 años ha disminuido del 33% (intervalo de incertidumbre [II]: 31-35%) en el 2000 al 16% (II: 14-19%) en el 2015. Tres cuartas partes de este cambio han ocurrido después del año 2005.

Casos y muertes evitadas. Se estima que un total acumulado de 1.2 mil millones de casos de paludismo menos y 6.2 millones de muertes por paludismo menos ocurrieron mundialmente entre los años 2001 y 20015, si se hubiesen mantenido las tasas de incidencia y mortalidad del año 2000. Se estima que las intervenciones para el control del paludismo en África subsahariana previnieron 663 millones de casos (rango: 542-753 millones), un 70% de los 943 millones de casos evitados en esta región entre los años 2001 y 2015. De estos 663 millones de casos evitados por las intervenciones para el control del paludismo, se estima que el 69% (II: 63-73%) se evitó por el uso de mosquiteros tratados con insecticidas (MTI), el 21% (17-29%) por el uso de la terapia combinada con artemisinina (TCA) y el 10% (14.6%) por el rociado residual intradomiciliario (RRI).

Progreso hacia la eliminación. Cada vez son más los países que están avanzando hacia la eliminación de la enfermedad. Mientras que en el año 2000 se estimó que sólo 13 países tuvieron menos de 1000 casos de paludismo, en el año 2015 se estima que 33 países han alcanzado esta meta. Conjuntamente, en el año 2014, 16 países reportaron cero casos autóctonos: Argentina, Armenia, Azerbaiyán, Costa Rica, Irak, Georgia, Kirguistán, Marruecos, Omán, Paraguay, Sri Lanka, Tayikistán, Turkmenistán, Turquía, Emiratos Árabes Unidos y Uzbekistán. Otros tres países y territorios reportaron menos de 10 casos autóctonos (Argelia, El Salvador y Mayotte [Francia]). Y en el año 2015, por primera vez, la Región Europea de la OMS reportó cero casos autóctonos, siguiendo la meta de la Declaración de Tashkent de eliminar el paludismo de la región para el año 2015.

Cobertura de las intervenciones clave

Población con acceso a mosquiteros tratados con insecticidas (MTI). En los países del África subsahariana, la proporción estimada con acceso a un MTI en su vivienda fue del 56% (intervalo de confianza [IC] al 95%: 51-61%) en el 2014 y del 67% (IC al 95%: 61-71%) en el 2015. Se trata de un aumento sustancial en relación con el año 2000 cuando el acceso a un MTI era de menos del 2%. Una proporción alta (alrededor del 82%) de los que tienen acceso a un MTI duermen debajo de él. En consecuencia, garantizar el acceso a un MTI es fundamental para el aumento de la proporción de la población que duerme bajo un MTI.

Población que duerme bajo un MTI. En los países en África subsahariana, la proporción estimada que duerme bajo un MTI fue del 46% (IC al 95%: 42-50%) en el año 2014 y 55% (IC al 95%: 50-58%) en el 2015; la proporción estimada de niños menores de 5 años que durmieron bajo un MTI en África subsahariana aumentó de menos del 2% en el año 2000 al 68% (IC al 95%: 61-72%) en 2015. La proporción estimada de la población durmiendo bajo un MTI varía ampliamente entre los países, con una mediana del 74% en los cinco países con las estimaciones más altas, y del 20% en los cinco países con las estimaciones más bajas.

Rociado residual intradomiciliario. La proporción de la población en riesgo de paludismo protegida por el RRI ha disminuido en todo el mundo de un máximo del 5.7% en el año 2010 a un 3.4% en 2014, con disminuciones observadas en todas las regiones excepto en la Región del Mediterráneo Oriental. A nivel mundial, en el año 2014, se protegieron 116 millones de personas mediante el RRI. De los 53 países que

reportaron los tipos de insecticidas utilizados para el rociado en el año 2014, 43 han usado piretroides, aunque algunos países también utilizaron insecticidas de una o dos clases más. Combinando los datos sobre la proporción de la población con acceso a un MTI en la vivienda y la proporción de personas protegidas por el RRI, la proporción estimada de personas que tuvieron alguna forma de control vectorial disponible en África subsahariana ha aumentado del 2% en el año 2000 al 59% en el 2014. Estas cifras están aún lejos de la meta de acceso universal marcada por la actualización del Plan de Acción Global de Malaria (GMAP por sus siglas en ingles *Global Malaria Action Plan*) en el 2011.

La quimioprevención en mujeres embarazadas. La proporción de mujeres embarazadas que recibieron al menos tres dosis de tratamiento preventivo intermitente durante el embarazo (TPIe) ha aumentado desde que la OMS revisara su recomendación en el año 2012. En el 2014, se estima que 52% de las mujeres embarazadas elegibles recibieron al menos una dosis de TPIe, el 40% recibió dos o más dosis y sólo el 17% recibió tres o más dosis. La diferencia entre la proporción de mujeres que acuden a la clínica de atención prenatal y la proporción que recibe la primera y siguientes dosis de TPIe indica que se han perdido oportunidades de ofrecer el TPIe a estas mujeres. En el África subsahariana, la proporción de mujeres que reciben TPIe varía en todo el continente, con 10 países que reportaron que más del 60% de las mujeres embarazadas recibieron una o más dosis, y otros nueve países que reportaron que más del 80% recibieron una o más dosis.

La quimioprevención en niños. La adopción e implementación de la quimioprevención en niños ha sido limitada. A partir del 2014, seis de los 15 países para los que la OMS recomienda la quimioprevención del paludismo estacional (SMC, por sus siglas en inglés *Seasonal Malaria Chemoprevention*) – Chad, Gambia, Guinea, Malí, Níger y Senegal – han adoptado la política. Al mismo tiempo, dos países de fuera de la subregión del Sahel – Congo y Togo –reportaron la adopción de esta política. Sólo un país, Chad, reportó la adopción de la política de tratamiento preventivo intermitente (TPI) para los lactantes en el año 2014. La vacuna contra el paludismo, RTS,S/AS01, recibió un dictamen científico positivo de la Agencia Europea de Medicamentos en virtud del artículo 58. Una implementación piloto de la primera vacuna contra el paludismo fue recomendada por el Grupo de Expertos de la OMS en Asesoramiento Estratégico (SAGE por sus siglas en inglés *Strategic Advisory Group of Experts on Immunization*) y el Comité Asesor de Políticas de la Malaria (MPAC por sus siglas en inglés *Malaria Policy Advisory Committee*).

Pruebas de diagnóstico. La proporción de casos sospechosos de paludismo que requieren atención sanitaria en el sector público, a los que se les realiza una prueba de diagnóstico, ha aumentado del 74% en 2005 al 78% en 2014. La tendencia global está dominada por países en el Asia sudoriental, en particular la India, que lleva a cabo un gran número de pruebas diagnósticas, con más de 100 millones de pruebas realizadas en 2014. La Región de África de la OMS ha tenido el mayor incremento en los niveles de pruebas de diagnóstico; de un 36% de casos de paludismo sospechosos en el año 2005, al 41% en el 2010 y al 65% en el 2014. Este aumento se debe principalmente al aumento en el uso de pruebas de diagnóstico rápido (PDR). El nivel de pruebas de diagnóstico realizadas es menor entre los niños febriles que buscan atención en el sector privado que en el sector público. En 18 encuestas representativas a nivel nacional, realizadas en África subsahariana entre los años 2013 y 2015, la mediana de la proporción de niños febriles a los que se les practicó una punción en el dedo o en el talón en los centros sanitarios del sector público fue del 53% (rango intercuartil [RIC]: 35 a 57%), mientras que en el sector privado formal fue de 36% (RIC: 20-54%) y de 6% (RIC: 3-9%).

Tratamiento. Se estima que la proporción de niños menores de 5 años con paludismo por *P. falciparum* que fueron tratados con TCA ha aumentado en menos de 1% en el año 2005 al 16% en el 2014 (rango 12-22%). Esta proporción se reduce sustancialmente por debajo del objetivo del acceso universal para el manejo de casos de paludismo del GMAP. Una de las razones principal es que una alta proporción de niños con fiebre no toman nada para el cuidado o recurren al sector privado informal, dónde son menos propensos a obtener un tratamiento con TCA. Mientras que la proporción

de niños tratados con TCA es cada vez mayor, la proporción de niños tratados con otros medicamentos antipalúdicos ha disminuido. Por lo tanto, existe una proporción creciente de niños con paludismo que recibieron el tratamiento con TCA (mediana de 47% entre 18 encuestas nacionales representativas realizadas en hogares, entre 2013 y 2015). La proporción de tratamientos antipalúdicos TCA fue más baja cuando se solicitó la atención en salud con proveedores informales, tales como puestos de venta o vendedores ambulantes.

Relación entre tratamientos y pruebas diagnósticas. El número total de tratamientos con TCA distribuidos en el sector público es hoy por hoy menor que el número de pruebas de diagnóstico para el paludismo suministradas en África subsahariana (relación de tratamientos: pruebas = 0.88 en el año 2014). No obstante, todavía hay margen para nuevas reducciones, ya que la proporción de tratamientos de pruebas diagnósticas debe aproximarse a la tasa de positividad de la prueba, que es menos de 44% en todos los países del África subsahariana.

Costos del control del paludismo y el ahorro de costes

Financiamiento de programas de control del paludismo. El financiamiento mundial estimado para el control del paludismo aumentó de US$ 960 millones en 2002 a US$ 2.5 mil millones en 2014. El financiamiento internacional representó el 78% del financiamiento del programa del paludismo en el 2014, y se redujo de US$ 2110 millones en el 2013 a US$ 1950 millones en el2014, es decir, un 8%, principalmente debido a los cambios en los acuerdos de financiamiento del Fondo Mundial para la Lucha contra el Sida, Tuberculosis y Paludismo. La mayor parte del financiamiento internacional (82%) se dirigió a la Región de África de la OMS. Se estimó que el financiamiento nacional para los PNCMs ha disminuido en un 1% entre el 2013 y el 2014, pasando de US$ 544 a US$ 550 millones. El financiamiento nacional reportado subestima las contribuciones nacionales totales para el control del paludismo, ya que generalmente los valores estimados se restringen al gasto en actividades de control del paludismo por parte de los PNCMs y excluyen los costos del sistema de salud asociados con el tratamiento de los pacientes.

Gasto en productos para el control del paludismo. Se estima que el gasto en productos para el control del paludismo (TCA, MTI, insecticidas y equipos de rociamiento para el RRI, y las PDR) ha aumentado 40 veces en los últimos 11 años, pasando de US$ 40 millones en 2004 a US$ 1600 millones en el 2014. Esto representó el 82% del gasto internacional para el paludismo del año 2014. Los MTI fueron responsables del 63% del gasto en productos, seguido de las TCA (25%), las PDR (9%) y el RRI (3%).

Ahorro en costos originados por el control del paludismo. De los casos evitados desde el año 2000, se estima que 263 millones de casos hubiesen buscado atención sanitaria en el sector público, lo que significa un ahorro de US $900 millones por el manejo de casos de paludismo en el África subsahariana entre los años 2001 y 2014. De los US$ 900 millones ahorrados, la mayor proporción, US$ 610 millones, se debe a los MTI/ MILD (68%) seguido por los TCA (156 millones, 17%) y los RII (134 millones, 15%). Estas estimaciones incluyen sólo los ahorros a los servicios de salud y no incluye el ahorro a las familias.

Desafíos pendientes y futuros

Los descensos del paludismo son más lentos en los países con alta carga de la enfermedad. Se estima que en el año 2015, 15 países aportaron el 80% de los casos y 15 países aportaron el 78% de la mortalidad. La carga mundial de mortalidad está dominada por los países del África subsahariana, con la República Democrática del Congo y Nigeria aportando juntos más del 35% del estimado total de muertes por paludismo a nivel mundial. Las disminuciones en las tasas de incidencia y mortalidad por paludismo fueron más lentas en los países con mayor número de casos y muertes

por paludismo en el año 2000. Si se quiere obtener un mayor progreso a nivel mundial, es necesario acelerar en gran medida las reducciones en la incidencia de casos.

Brechas en la cobertura de las intervenciones. Millones de personas todavía no reciben los servicios que necesitan. En África subsahariana, se estima que 269 millones de los 834 millones de personas en riesgo de padecer el paludismo en el año 2014 vivían en viviendas sin ningún MTI o RRI; 15 millones de los 28 millones de mujeres embarazadas en riesgo de sufrir la enfermedad no recibieron ninguna dosis de TPIe; y entre 68 y 80 millones de los 92 millones de niños con paludismo no recibieron TCA.

Deficiencias en los sistemas de salud en los países con la carga de paludismo más elevada. La capacidad de cubrir las brechas en la cobertura de las intervenciones está limitada por las deficiencias en los sistemas de salud en los países con mayor riesgo de transmisión. La proporción de pacientes afectados por el paludismo que buscan atención en los centros sanitarios del sector público es menor en los países con un alto número estimado de casos de paludismo que en países con menos casos. Por el contrario, la proporción de pacientes con sospecha de paludismo que buscan atención el sector privado aumenta con el número estimado de casos en un país. La capacidad de fortalecer los sistemas de salud en los países dónde el paludismo es endémico es limitada, ya que los países con un alto número de casos tienen menos ingresos nacionales brutos y menor gasto nacional total per cápita en comparación con los países con menos casos. El gasto internacional para el control del paludismo se distribuye de manera equitativamente según la carga de la enfermedad, sin embargo, una gran parte de este financiamiento se gasta en productos y no atiende las debilidades fundamentales de los sistemas de salud. De este modo, para ampliar rápidamente el acceso a las intervenciones contra el paludismo, se requieren formas innovadoras de prestación de servicios para expandir el acceso a las intervenciones y tratamientos palúdicos; tales medios incluyen enfoques basados en la comunidad y el compromiso con los proveedores del sector privado.

La carga económica del paludismo en los sistemas de salud. Desde el año 2000, se estima que el paludismo en África subsahariana ha costado en promedio, sólo por el manejo de casos, cerca de US$ 300 millones. Dado que el paludismo se concentra en los países con ingresos nacionales relativamente bajos, el costo del tratamiento del paludismo recae de manera desproporcionada en la mayoría de los países con recursos limitados.

El paludismo por *P. vivax*. El paludismo por *P. vivax* es un problema importante de salud pública en muchas partes del mundo. Se estima que esta forma del paludismo causó 13.8 millones de casos en todo el mundo en el 2015 y contribuyó con cerca de la mitad de todos los casos de paludismo fuera de África. La mayoría de los casos de paludismo por *P. vivax* ocurrieron en la Región de Asia sudoriental de la OMS (74%), seguida de la Región del Mediterráneo Oriental (11%) y la Región de África (10%). Se estima que más del 80% de los casos de paludismo por *P. vivax* ocurren en tres países (Etiopía, India y Pakistán). *P. vivax* predomina en los países que son los principales candidatos para la eliminación del paludismo y contribuye con más del 70% de los casos en los países con menos de 5000 casos notificados cada año.

En todas las regiones endémicas se han registrado casos graves y muertes debidas al paludismo por *P. vivax*. A nivel mundial, se estima que en el año 2015 el número total de muertes por paludismo por *P. vivax* fue entre 1400 y 14 900, y entre 1400 y 12 900 fuera de África subsahariana, es decir, de 3.5 a 16% de todas las muertes por paludismo que ocurrieron fuera de África subsahariana. Sin embargo, la información atribuibles a la población, sobre los riesgos de enfermedad severa y mortalidad debidos al paludismo por *P. vivax*, es escasa y se requiere más investigación para perfeccionar las estimaciones de mortalidad.

Resistencia a los insecticidas. La efectividad del control vectorial basado en el uso de insecticidas se ve amenazada por el desarrollo de resistencia del parásito los insecticidas utilizados en los MTI y el RRI. Desde el año 2010, de los 78 países que reportaron datos de monitorización, 60 reportaron resistencia en una población vectorial a por lo menos un

insecticida, y 49 reportaron resistencia a insecticidas de dos o más clases. La resistencia más comúnmente reportada fue a los piretroides. La resistencia a los piretroides ha sido detectada en todos los vectores principales que transmiten el paludismo, y se ha reportado resistencia en tres cuartas partes de los países que monitorizaron esta clase de insecticidas en el año 2014. Sin embargo, a pesar de la resistencia, los mosquiteros impregnados con insecticidas de larga duración (MILD) continúan siendo efectivos.

Resistencia a los medicamentos antipalúdicos. Se ha detectado resistencia del *P. falciparum* a la artemisinina en cinco países de la subregión del Gran Mekong: Camboya, la República Democrática Popular de Laos, Myanmar, Tailandia y Vietnam. A pesar de los cambios observados en la sensibilidad del parásito, que se manifiestan como un retraso en la eliminación del mismo, los pacientes siguen respondiendo a un tratamiento combinado, siempre que el medicamento con el que se asocie siga siendo eficaz. La eficacia del arteméter-lumefantrina (AL) en África y América del Sur sigue siendo alta, con tasas de fallo terapéutico generalmente por debajo del 10%. Asimismo se han reportado tasas de fallo terapéutica de menos del 10% al artesunato-amodiaquina (ASAQ) en los 25 países de África en los que el ASAQ es la primera o segunda línea de tratamiento. Se han reportado tasas altas de fallo terapéutico con artesunato-SP (ASSP) en el noreste de la India (19-25.9%), Somalia (22%) y Sudán (9.4%). En Somalia, el fallo terapéutico está relacionado con la resistencia a la SP, en ausencia de resistencia a la artemisinina. Para el paludismo por *P. vivax*, se ha confirmado al menos algún caso verdadero de resistencia a la cloroquina (con concentraciones de cloroquina más desetilcloroquina en sangre total de >100 ng/ml en el día de la insuficiencia) en 10 países: Bolivia, Brasil, Etiopía, Indonesia, Malasia, Myanmar, Papúa Nueva Guinea, Perú, las Islas Salomón y Tailandia.

Próximos pasos

Para abordar los desafíos pendientes y emergentes, la OMS ha desarrollado la *Estrategia Técnica Mundial para la Malaria 2016-2030*, que fue adoptada por la Asamblea Mundial de la Salud en mayo del 2015. Dicha estrategia establece los objetivos más ambiciosos para la reducción de casos y muertes por paludismo desde que se inició la era de erradicación del paludismo. La estrategia está alineada con los objetivos de la *Acción e Inversión para vencer la Malaria 2016-2030 - por un mundo libre de malaria*, de la RBM para asegurar los objetivos compartidos y complementarios. La estrategia tiene tres grandes pilares. El primero, lograr el acceso universal a la prevención, el diagnóstico y el tratamiento del paludismo. El segundo, acelerar los esfuerzos para lograr la eliminación y alcanzar el estado exento de paludismo. Y el tercero, transformar la vigilancia palúdica en una intervención básica. Se estima que las inversiones anuales para el control y la eliminación del paludismo tendrán que aumentar a US$ 6.4 mil millones por año para el 2020 para cumplir con el primer hito en una reducción del 40% en las tasas de incidencia y mortalidad por paludismo. Posteriormente, las inversiones anuales deberán aumentar a US$ 7.7 mil millones para el año 2025 para cumplir con el segundo de una reducción del 75%. Finalmente, para lograr el objetivo de una reducción del 90%, se estima que el gasto anual en paludismo tendrá que alcanzar los US$ 8.7 mil millones para el año 2030.

Progreso en el control y la eliminación del paludismo de acuerdo a los indicadores ODM y GMAP

Indicador de los ODM	2000	2005	2010	2015	% de cambio
6.6. Tasa de incidencia asociada con el paludismo (por cada 1000 en riesgo) y	146	134	113	91	-37%
Tasa de muertes asociadas con el paludismo (por cada 100 000 en riesgo)	47	37	26	19	-60%
6.7. Proporción de niños menores de 5 años que duermen bajo un mosquitero tratado con insecticida[a]	2%	7%	35%	68%	>100%
6.8. Proporción de niños menores de 5 años con fiebre que son tratados con medicamentos antipalúdicos adecuados[a,b]	<1%	3%	12%	13%	>100%

Indicador del GMAP	2000	2005	2010	2015	% de cambio
Muertes intrahospitalarias por paludismo por cada 1000 personas por año	Ver indicador 6.6 de los ODM				
Tasa de mortalidad por todas las causas en menores de cinco años (por 1000 nacidos vivos)	76	63	52	43	-43%
% de casos sospechosos de paludismo a los que se les realizó una prueba parasitológica[c]	ND	74%	71%	78%	
% de niños menores de 5 años con fiebre en las dos últimas semanas a quienes se les realizó una punción de dedo o talón[d]	ND	ND	ND	31%	
% de casos confirmados de paludismo que recibieron tratamiento antipalúdicos de primera línea de acuerdo a la política nacional[a,e]	NA	1%	7%	16%	>100%
% que recibieron tratamiento de primera línea entre los niños menores de 5 años con fiebre en las últimas 2 semanas, que recibieron algún medicamento antipalúdico[a,b]	NA	0%	41%	45%	
Casos confirmados de paludismo (microscopía o PDR) por 1000 personas por año	Ver indicador 6.6 de los ODM				
Prevalencia de parásitos: proporción de niños entre 6–59 meses con infección de paludismo[a]	32%	29%	22%	16%	-50%
% de la población con acceso a un MTI dentro de su vivienda[a]	2%	7%	36%	67%	>100%
% de la población que durmió bajo un MTI la noche anterior[a]	2%	6%	29%	55%	>100%
% de la población protegida por el RRI en los últimos 12 meses[c,f,g]	2%	3%	6%	3%	50%
% viviendas con al menos un MTI para cada dos personas y/o rociadas con RRI dentro de los últimos 12 meses[a,g]	1%	4%	24%	46%	>100%
% de mujeres que recibieron por lo menos tres o más dosis de TPIe durante las visitas prenatales, durante su último embarazo[a,c]	ND	ND	5%	17%	>100%
% de distritos que reportan el número mensual de casos sospechosos de paludismo, el número de casos a los que se les practicó una prueba de diagnóstico y el número de casos confirmados de paludismo	ND	ND	ND	ND	
Número de países nuevos en los que se ha eliminado el paludismo[h]	2	2	7	16	

MTI, mosquitero tratado con insecticida; NA, no aplicable; ND, datos no disponibles; ODM, Objetivo de Desarrollo del Milenio; PDR, prueba de diagnóstico rápido; RRI, rociado residual intradomiciliario; TPIe, tratamiento preventivo intermitente durante el embarazo

[a] Indicador calculado solamente para el África subsahariana
[b] Se refiere a terapias combinadas con artemisinas
[c] El estimado mostrado para el 2015 corresponde al del 2014
[d] Estimado de la mediana de las encuestas domiciliarias más recientes en África subsahariana para 2013–2015; rango intercuartil: 19–40%
[e] La informacion de tratamientos de primera linea adoptados por los países son variables, el indicador mostrado considera casos de *P. falciparum* tradados con terapias combinadas con artemisinas.
[f] El estimado no incluye países de la Región Europea de la OMS
[g] Se asume que la cobertura del RRI del 2015 es la misma que la del 2014
[h] Países con ningún caso autóctonos por tres años consecutivos

1. Introduction

2015 is the final year for targets set by the World Health Assembly and Roll Back Malaria to reduce malaria incidence and mortality. It is also the year that marks the end of the Millennium Development Goals and the advent of the Sustainable Development Goals.

1.1 Introduction to the *World malaria report 2015*

The *World malaria report 2015* describes malaria disease trends and changes in the coverage and financing of programmes between 2000 and 2015, summarizing progress towards international targets. It highlights the key challenges that remain in 2015, the goals for malaria control between 2016 and 2030, and the strategies that will be used to achieve those goals. It also contains regional profiles that summarize trends in each WHO region, and country profiles for countries with ongoing malaria transmission and for those that have recently achieved zero indigenous cases. Finally, annexes provide details of the sources of data, the methods used in the analyses, and tables containing country and regional data.

The world malaria report is produced every year by the WHO Global Malaria Programme, with the help of WHO regional and country offices, ministries of health in endemic countries, and a broad range of other partners. Data are assembled from all 95 countries and territories with ongoing malaria transmission, and a further six countries that have recently eliminated malaria and are currently implementing measures to prevent re-establishment of transmission. Most data presented are those reported for 2014 and 2015, although in some cases projections have been made into 2015 to assess progress against targets for 2015 (Annex 1 describes the methods used for each chart and table).

1.2 Introduction to malaria

Malaria in humans is caused by five species of parasites belonging to the genus *Plasmodium*. Four of these – *P. falciparum*, *P. vivax*, *P. malariae* and *P. ovale* – are human malaria species that are spread from one person to another via the bite of female mosquitoes of the genus *Anopheles*. There are about 400 different species of *Anopheles* mosquitoes, but only 30 of these are vectors of major importance. In recent years, human cases of malaria due to *P. knowlesi* have been recorded – this species causes malaria among monkeys in certain forested areas of South-East Asia. Current information suggests that *P. knowlesi* malaria is not spread from person to person, but rather occurs in people when an *Anopheles* mosquito infected by a monkey then bites and infects humans (zoonotic transmission).

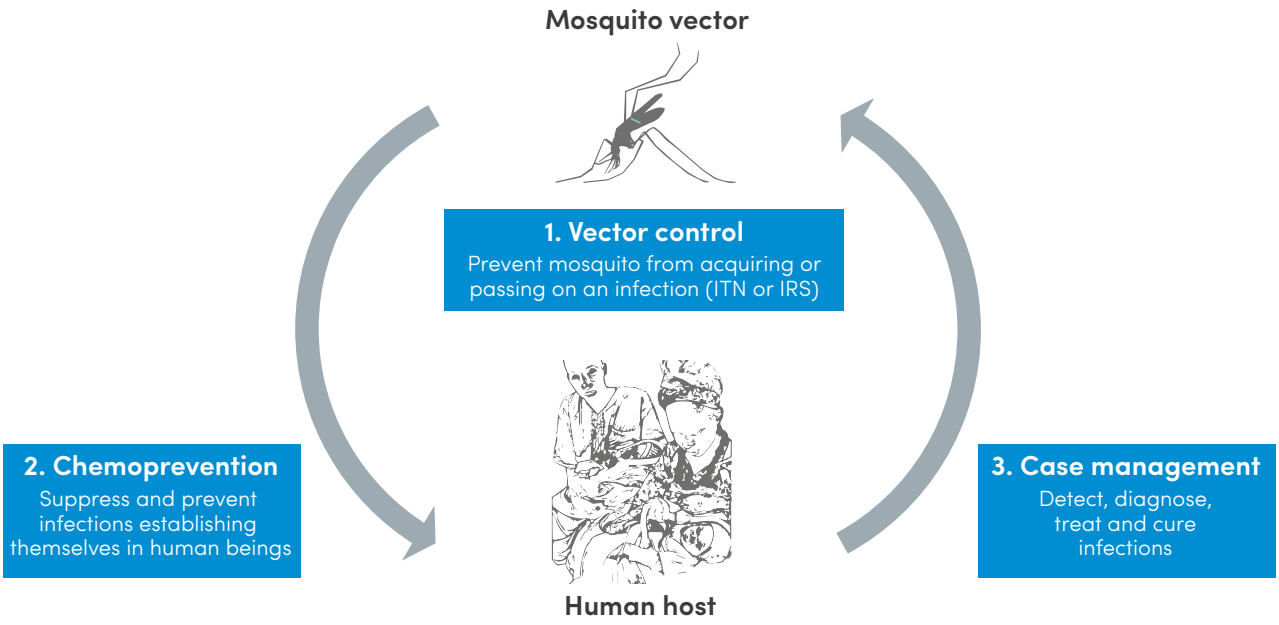
***P. falciparum* and *P. vivax* malaria pose the greatest public health challenge.** *P. falciparum* is most prevalent on the African continent, and is responsible for most deaths from malaria. *P. vivax* has a wider geographical distribution than *P. falciparum* because it can develop in the *Anopheles* mosquito vector at lower temperatures, and can survive at higher altitudes and in cooler climates. It also has a dormant liver stage (known as a hypnozoite) that can activate months after an initial infection, causing a relapse of symptoms. The dormant stage enables *P. vivax* to survive for long periods when *Anopheles* mosquitoes are not present (e.g. during winter months). Although *P. vivax* can occur throughout Africa, the risk of infection with this species is quite low there because of the absence in many African populations of the Duffy gene, which produces a protein necessary for *P. vivax* to invade red blood cells. In many areas outside Africa, infections due to *P. vivax* are more common than those due to *P. falciparum*, and cause substantial morbidity.

1.3 Strategies to control and eliminate malaria

Malaria can be prevented and treated using cost-effective interventions. The main interventions are summarized here and discussed in detail in Section 3. They are vector control (which reduces transmission of parasites from humans to mosquitoes and then back to humans), which is achieved largely through use of insecticide-treated mosquito nets (ITNs) or indoor residual spraying (IRS); chemoprevention (which suppresses blood-stage infection in humans); and case management (which includes prompt diagnosis and treatment of infections) (Figure 1.1).

Use of ITNs reduces malaria mortality rates by an estimated 55% in children aged under 5 years in sub-Saharan Africa (*1*). Their public health impact is due to a reduction in malaria deaths, and also to reductions in child deaths from other causes that are associated with, or exacerbated by, malaria (e.g. acute respiratory infection, low birth weight and malnutrition). ITNs have reduced the incidence of malaria cases in field trials by more than 50% in

Figure 1.1 Main strategies to prevent and treat malaria



a variety of settings (*2*). When the nets are used by pregnant women, they are also efficacious in reducing maternal anaemia, placental infection and low birth weight. Historical and programme documentation has established a similar impact for IRS, although randomized trial data are limited (*3*). In a few specific settings and circumstances, the core interventions of ITNs and IRS can be supplemented by larval source management (*4*) or other environmental modifications.

Chemoprevention is particularly effective in pregnant women and young children. Intermittent preventive treatment in pregnancy (IPTp) involves administration of sulfadoxine-pyrimethamine (SP) during antenatal clinic visits in the second and third trimesters of pregnancy. It has been shown to reduce severe maternal anaemia (*5*), low birth weight (*6*) and perinatal mortality (*7*). By maintaining therapeutic antimalarial drug concentrations in the blood during periods of greatest malaria risk, seasonal malaria chemoprevention (SMC) with amodiaquine plus SP (AQ+SP) for children aged 3–59 months has the potential to avert millions of cases and thousands of deaths in children living in areas of highly seasonal malaria transmission in the Sahel subregion (*8*). Intermittent preventive treatment in infants (IPTi) with SP, delivered at routine childhood immunization clinics (at 2, 3 and 9 months of age), provides protection in the first year of life against clinical malaria and anaemia; it reduces hospital admissions for infants with malaria and admissions for all causes (*9*). A malaria vaccine, RTS,S/AS01, which requires administration of four doses, has been found to reduce clinical malaria by 39% (95% confidence interval [CI]: 34–43%) and severe malaria by 31.5% (95% CI: 9.3–48.3%) in children who received the vaccine at age 5–17 months (*10*). However, the extent to which the protection observed in the Phase 3 trial can be replicated in the context of the routine health system is uncertain; WHO's Strategic Advisory Group of Experts on Immunization (SAGE) and the Malaria Policy Advisory Committee (MPAC) recommended that these issues be further assessed through large-scale implementation projects (*11*). WHO has adopted these recommendations and supports the need to proceed with these pilots as the next step for the world's first malaria vaccine.

Parasitological confirmation of malaria ensures treatment is given only to those infected with malaria parasites; current medicines against malaria are highly effective. In most malaria endemic areas, less than half of patients with suspected malaria infection are truly infected with a malaria parasite. Therefore, parasitological confirmation by light microscopy or rapid diagnostic tests (RDTs) is recommended in all patients before antimalarial treatment is started. Artemisinin-based combination therapy (ACT) of uncomplicated *P. falciparum* malaria has been estimated to reduce malaria mortality in children aged 1–23 months by 99% (range: 94–100%), and in children aged 24–59 months by 97% (range: 86–99%) (*1*).

1.4 Global goals, targets and indicators 2000–2015

Malaria has been the focus of multiple declarations, and a range of targets have been set since the beginning of the millennium. The disease has received heightened attention internationally since the launch of the Roll Back Malaria (RBM) Partnership in 1998 by Dr Gro Harlem Brundtland. It has been the subject of declarations by several institutions that have set targets for malaria control and elimination. Table 1.1 summarizes the declarations and plans made since 2000. The focus of the *World malaria report 2015* is confined to those declarations and plans that are still current in 2015.

Malaria control has been a central element of the Millennium Development Goals (MDGs). Combating malaria, along with HIV/AIDS, was identified as a priority at the 2000 United Nations General Assembly (*12*), and was designated

Table 1.1 Declarations and plans containing targets for malaria control and elimination 2000–2015

Year of publication	Declaration/Plan	End year for targets
2000	United Nations Millennium Declaration (*12*)	2015
2000	The Abuja Declaration and the Plan of Action (*13*)	2005
2005	World Health Assembly Resoultion WHA58.2 (*14*)	2015
2008	The Global Malaria Action Plan for a malaria-free world (GMAP) (*15*)	2015
2011	Refined/updated GMAP objectives, targets, milestones and priorities beyond 2011 (*16*)	2015

Table 1.2 MDG 6 and associated malaria target and indicators

Goal	6. Combat HIV/AIDS, malaria and other diseases
Target	6C. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
Indicators	6.6. Incidence and death rates associated with malaria 6.7. Proportion of children under 5 sleeping under insecticide-treated mosquito nets 6.8. Proportion of children under 5 with fever who are treated with appropriate antimalarial drugs

as Goal 6 of the eight MDGs. Target 6C was to "Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases", and Indicators 6.6–6.8 were selected to track progress in reducing morbidity and mortality and the implementation of malaria interventions (Table 1.2). Given that, globally, malaria accounted for an estimated 7% of all deaths in children aged 1–59 months in 2000, and 17% of all deaths in sub-Saharan Africa (Section 2.2), malaria control was also central to MDG 4 (achieve a two thirds reduction in the mortality rate among children aged under 5 years between 1990 and 2015). Malaria efforts were also expected to contribute to achieving MDG 1 (eradicate extreme poverty and hunger), MDG 2 (achieve universal primary education), MDG 3 (promote gender equality and empower women), MDG 5 (improve maternal health) and MDG 8 (develop a global partnership for development).

Malaria has been highlighted in World Health Assembly and RBM targets. In 2005, the World Health Assembly set a target to reduce malaria cases and deaths by 75% by 2015 (*14*). No baseline year was set, but it is assumed to be 2000 (as for other targets), and that progress would be tracked using incidence and death rates, as for MDG 6. In 2011, the RBM Partnership updated the objectives and targets that had been set out in the *Global Malaria Action Plan* (GMAP) in 2008 (*15*). The RBM update shared the World Health Assembly's objective of reducing malaria cases by 75% by 2015, but had a new and more ambitious objective to reduce malaria deaths to near zero by 2015. A further RBM objective was to eliminate malaria by the end of 2015 in 8–10 new countries (since 2008) and in the WHO European Region.

The objectives of mortality and morbidity reduction are linked to targets for universal access to malaria interventions – which would mean that 100% of the population in need of an intervention has access to it. A list of recommended indicators against each objective and target is shown in Table 1.3.

The *World malaria report 2015* aims to report on progress towards each of the international targets, where possible. Some indicators of the RBM updated objectives and targets were intended primarily for country-level use rather than for international reporting and comparison (e.g. confirmed malaria cases per 1000 persons per year and inpatient malaria deaths per 1000 persons per year). In these cases, close equivalents are reported (i.e. incidence and death rates associated with malaria – which take into account patients who use private-sector facilities, where reporting may be absent or inconsistent, or those who do not seek care). In some cases, the indicators do not measure a target directly (e.g. all-cause under-5 mortality rate is not a direct measure of malaria mortality), but these indicators are in widespread use and can inform progress on broader public health objectives. Some indicators are reported only for sub-Saharan Africa because they are most relevant there (e.g. all-cause under-5 mortality rate, pregnant women who received intermittent preventive treatment for malaria) or because of data availability (e.g. population who slept under an ITN the previous night). Most of the data contained in the *World malaria report 2015* cover until the end 2014 or the first half of 2015. For some indicators, notably those associated with MDG reporting, projections have been made to the end of 2015, as described in Annex 1.

Table 1.3 Roll Back Malaria objectives, targets for 2015 and indicators for measuring progress (*17*)

GMAP objective or target	Key indicators
Objective 1. **Reduce global malaria deaths to near zero* by end 2015**	Inpatient malaria deaths per 1000 persons per year All-cause under-five mortality rate (5q0)
Target 1.1 Achieve universal access to case management in the public sector **Target 1.2** Achieve universal access to case management, or appropriate referral, in the private sector	% suspected malaria cases that receive a parasitiological test % children aged under 5 years with fever in the last two weeks who had a finger/heel stick % confirmed malaria cases that receive first-line antimalarial treatment according to national policy
Target 1.3 Achieve universal access to community case management (CCM) of malaria	% receiving first-line treatment among children aged under 5 years with fever in the last 2 weeks who received any antimalarial drugs
Objective 2. **Reduce global malaria cases by 75% by end 2015 (from 2000 levels)**	Confirmed malaria cases (microscopy or RDT) per 1000 persons per year Parasite prevalence: proportion of children aged 6–59 months with malaria infection
Target 2.1 Achieve universal access to and utilization of prevention measures** **Target 2.2** Sustain universal access to and utilization of prevention measures	% population with access to an ITN within their household % population who slept under an ITN the previous night % population protected by IRS within the last 12 months % households with at least one ITN for every two people and/or sprayed by IRS within the last 12 months % women who received intermittent preventive treatment for malaria during ANC visits during their last pregnancy
Target 2.3 Accelerate development of surveillance systems	% districts reporting monthly number of suspected malaria cases, number of cases receiving a diagnostic test and number of confirmed malaria cases
Objective 3. **Eliminate malaria by end 2015 in 10 new countries (since 2008) and in the WHO European Region**	Number of new countries in which malaria has been eliminated

* In areas where public health facilities are able to provide a parasitological test to all suspected malaria cases, near zero malaria deaths is defined as no more than 1 confirmed malaria death per 100 000 population at risk.

** Universal access to and utilization is defined as every person at risk sleeping under a quality ITN or in a space protected by IRS and every pregnant woman at risk receiving at least one dose of intermittent preventive treatment (IPTp) in settings where IPTp is appropriate.

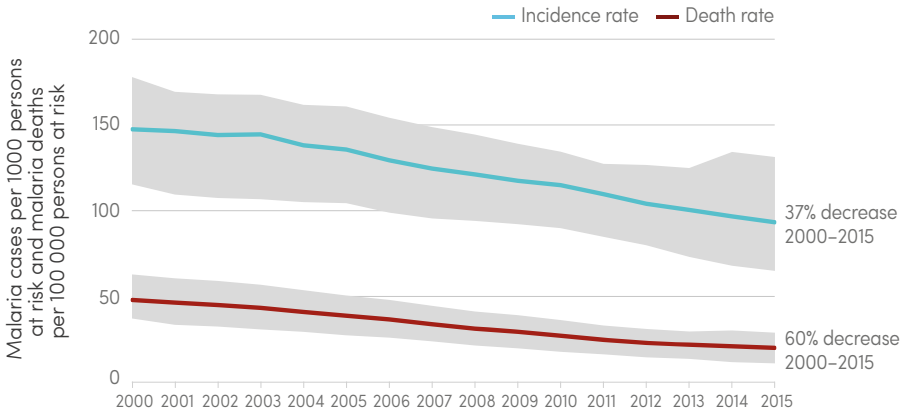
2. Trends in infection prevalence, cases and deaths

There have been profound changes in the incidence of malaria since the beginning of the millennium – the risk of acquiring malaria has been reduced by 37% since 2000 and the risk of dying has decreased by 60%. An increasing number of countries are moving towards eliminating malaria, and zero indigenous cases were reported from the WHO European Region for the first time since record keeping began.

2.1 Global trends in malaria incidence and mortality

There were large reductions in the number of malaria cases and deaths between 2000 and 2015. In 2000, it was estimated that there were 262 million cases of malaria globally (range: 205–316 million), leading to 839 000 deaths (range: 653 000–1.1 million) (**Table 2.1**). By 2015, it was estimated that the number of malaria cases had decreased to 214 million (range: 149–303 million), and the number of deaths to 438 000 (range: 236 000–635 000). These figures equate to an 18% decline in estimated malaria cases and a 48% decline in the number of deaths during this period. Most cases in 2015 are estimated to occur in the WHO African Region (88%), followed by the WHO South-East Asia Region (10%) and the WHO Eastern Mediterranean Region (2%). Similarly, it is estimated that in 2015 most deaths (90%) were in the WHO African Region, followed by the WHO South-East Asia Region (7%) and the WHO Eastern Mediterranean Region (2%).

Figure 2.1 Estimated malaria case incidence and death rate globally, 2000–2015



Source: *WHO estimates*

MDG Target 6C, "to have halted and begun to reverse the incidence of malaria", has been met. The incidence rate of malaria, which takes into account population growth, is estimated to have decreased by 37% globally between 2000 and 2015; in the same period, the estimated malaria mortality rate decreased by 60% (Table 2.2, Figure 2.1). Therefore, MDG Target 6C has been met. In addition, substantial progress has been made towards the World Health Assembly target to reduce the malaria burden by 75% by 2015, and the RBM target to reduce deaths to near zero. Reductions in the incidence of malaria cases are estimated to have been greatest in the WHO

Table 2.1 Estimated malaria cases and deaths, by WHO region, 2000–2015

	Estimated number of malaria cases (000's)				Change	Estimated number of malaria deaths				Change
WHO region	**2000**	**2005**	**2010**	**2015**	**2000–2015**	**2000**	**2005**	**2010**	**2015**	**2000–2015**
African	214 000	217 000	209 000	188 000	-12%	764 000	670 000	499 000	395 000	-48%
Americas	2 500	1 800	1 100	660	-74%	1 600	1 200	1 100	500	-69%
Eastern Mediterranean	9 100	8 600	4 000	3 900	-57%	15 000	15 000	7 000	7 000	-51%
European*	36	5.6	0.2	0	-100%	0	0	0	0	
South-East Asia	33 000	34 000	28 000	20 000	-39%	51 000	48 000	44 000	32 000	-37%
Western Pacific	3 700	2 300	1 700	1 500	-59%	8 100	4 200	3 500	3 200	-60%
World	**262 000**	**264 000**	**243 000**	**214 000**	**-18%**	**839 000**	**738 000**	**554 000**	**438 000**	**-48%**
Lower bound	205 000	203 000	190 000	149 000		653 000	522 000	362 000	236 000	
Upper bound	316 000	313 000	285 000	303 000		1 099 000	961 000	741 000	635 000	

* There were no recorded deaths among indigenous cases in WHO European Region for the years shown.

Source: *WHO estimates*

Table 2.2 Estimated malaria incidence and death rates, by WHO region, 2000–2015

	Estimated malaria incidence rate per 1000 at risk of malaria				Change	Estimated malaria death rate per 100 000 at risk of malaria				Change
WHO region	**2000**	**2005**	**2010**	**2015**	**2000–2015**	**2000**	**2005**	**2010**	**2015**	**2000–2015**
African	427	378	315	246	-42%	153	117	75	52	-66%
Americas	40	26	16	9	-78%	2.6	1.9	1.5	0.7	-72%
Eastern Mediterranean	59	49	20	18	-70%	9.3	8.3	3.6	3.3	-64%
European	28	4	0.1	0	-100%	0	0	0	0	-100%
South-East Asia	44	42	33	23	-49%	6.9	6.0	5.1	3.5	-49%
Western Pacific	11	6	5	4	-65%	2.4	1.2	1.0	0.9	-65%
World	**146**	**134**	**113**	**91**	**-37%**	**47**	**37**	**26**	**19**	**-60%**
Lower bound	114	103	88	63		36	27	17	10	
Upper bound	176	159	132	129		61	49	34	27	

Source: *WHO estimates*

European Region (100%), followed by the WHO Region of the Americas (78%), the WHO Eastern Mediterranean Region (70%) and the WHO Western Pacific Region (65%) (Figure 2.2). The malaria mortality rate is estimated to have declined by 66% in the WHO African Region between 2000 and 2013.

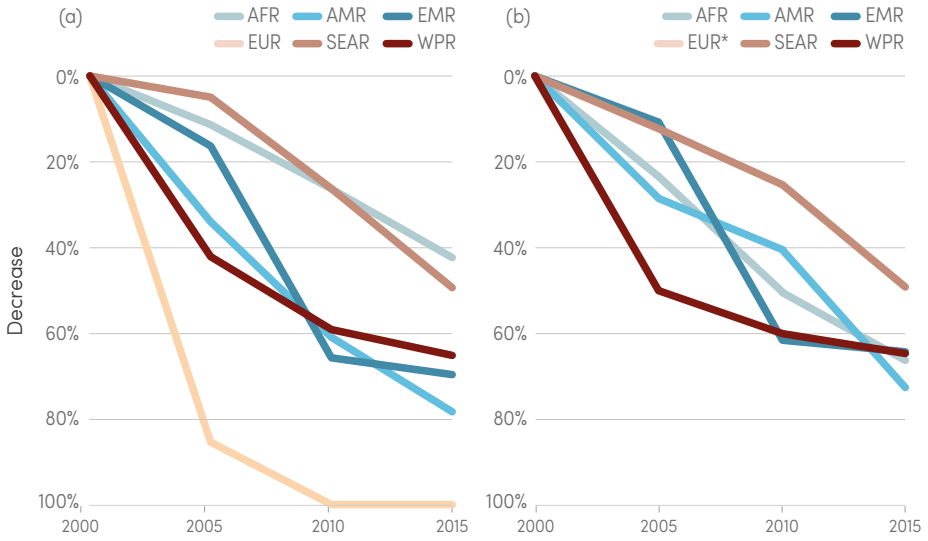
The number of malaria deaths in children aged under 5 years is estimated to have decreased from 723 000 globally in 2000 (range: 563 000–948 000) to 306 000 in 2015 (range: 219 000–421 000). The bulk of this decrease occurred in the WHO African Region, where the estimated number of deaths fell from 694 000 in 2000 (range: 569 000–901 000) to 292 000 in 2015 (range: 212 000–384 000). While malaria remains a major killer of children, taking the life of a child every 2 minutes, the progress made in reducing deaths in children aged under 5 years has been substantial, particularly in sub-Saharan Africa (Table 2.3).

2.2 Child mortality and infection prevalence in sub-Saharan Africa

The under-5 mortality rate (U5MR) from all causes fell by 48% in malaria endemic countries in sub-Saharan Africa between 2000 and 2015. In 2000, the U5MR in malaria endemic countries was 158 deaths per 1000 live births, leading to 4.3 million deaths in children aged under 5 years. By 2015, the U5MR had decreased to 82 deaths per 1000 live births, leading to 2.9 million deaths (Figure 2.3).

As a result of the substantial reductions in malaria mortality, malaria is no longer the leading cause of death among children in sub-Saharan Africa. In 2000, globally, malaria accounted for 7% of deaths in children aged under 5 years, and 17% of these deaths in sub-Saharan Africa, where it was the leading cause of death. As a result of the large decreases in malaria mortality in children aged under 5 years, malaria accounted for just 5% of under-five deaths globally in 2015, and 10% of under-five deaths in sub-Saharan Africa, where it is now the fourth highest cause of death (Figure 2.4).

Figure 2.2 Percentage decrease in (a) estimated malaria case incidence and (b) malaria death rate, by WHO region, 2000–2015



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

* There were no recorded deaths among indigenous cases in the WHO European Region for the years shown.

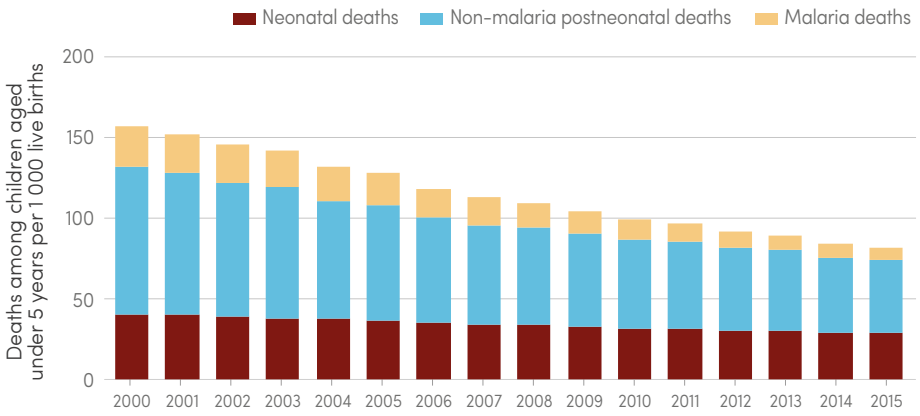
Source: *WHO estimates*

Table 2.3 Estimated number of malaria deaths in children aged under 5 years, by WHO region, 2015

	Estimated number of malaria deaths in children aged under 5 years				Change	Estimated malaria death rate per 100 000 children aged under 5 years				Change
WHO region	**2000**	**2005**	**2010**	**2015**	**2000–2015**	**2000**	**2005**	**2010**	**2015**	**2000–2015**
African	694 000	591 000	410 000	292 000	-58%	7.84	5.82	3.55	2.26	-71%
Americas	400	300	300	100	-66%	0.06	0.05	0.04	0.02	-64%
Eastern Mediterranean	5 300	5 200	2 000	2 200	-58%	0.44	0.33	0.15	0.14	-69%
European	0	0	0	0		0	0	0	0	
South-East Asia	19 000	16 000	14 000	10 000	-49%	0.22	0.18	0.16	0.11	-48%
Western Pacific	4 700	2 000	1 600	1 500	-68%	0.18	0.08	0.06	0.06	-69%
World	**723 000**	**614 000**	**428 000**	**306 000**	**-58%**	**3.12**	**2.49**	**1.63**	**1.10**	**-65%**
Lower bound	563 000	434 000	279 000	219 000		2.43	1.76	1.06	0.79	
Upper bound	948 000	800 000	572 000	421 000		4.09	3.24	2.17	1.51	

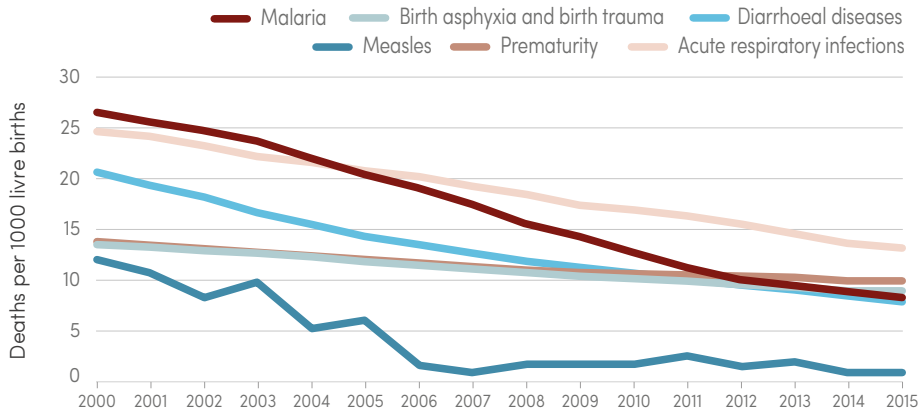
Source: *WHO estimates*

Figure 2.3 Under-5 mortality rate in sub-Saharan Africa, 2000–2015



Source: *WHO estimates*

Figure 2.4 Leading causes of death among children aged under 5 years in sub-Saharan Africa, 2000–2015

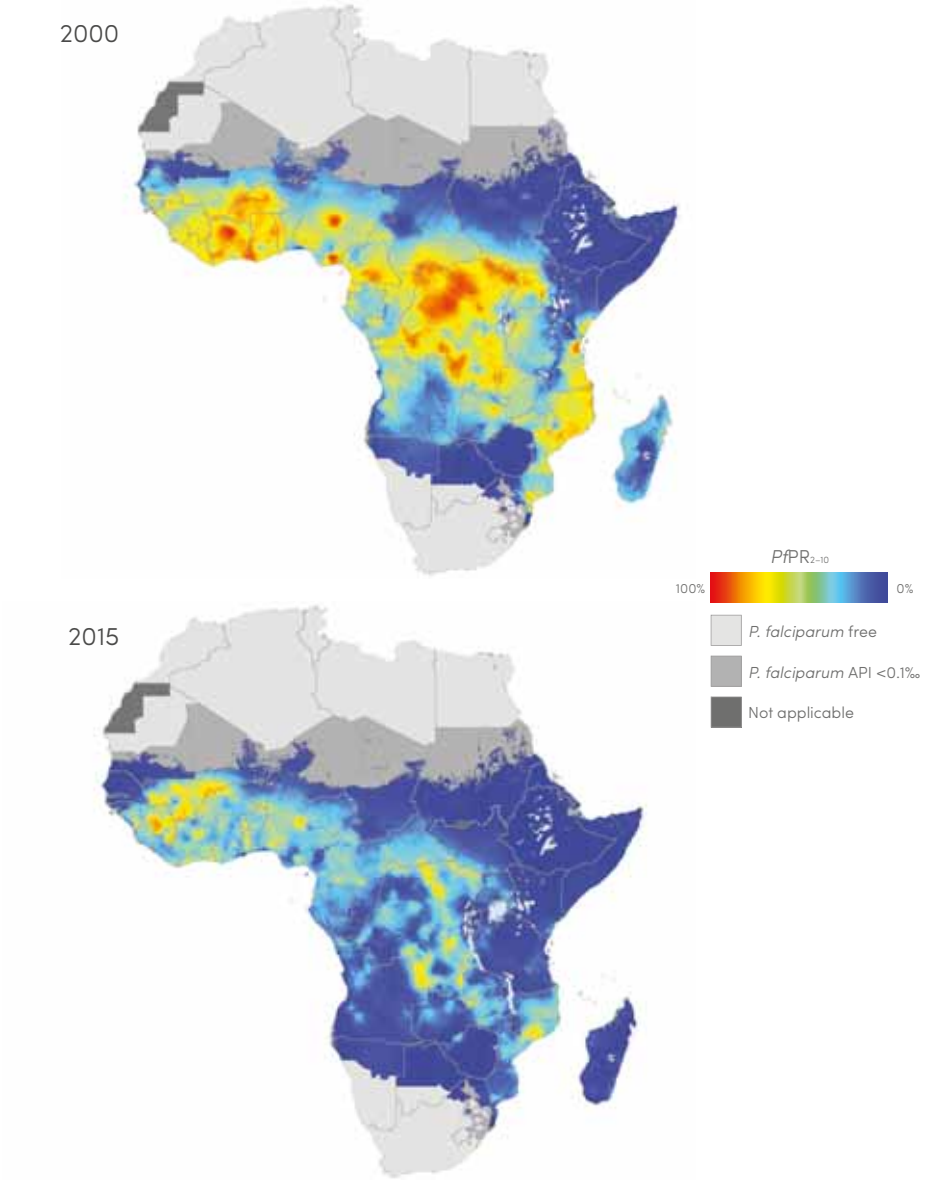


Conditions that are responsible for more than 10 deaths per 1000 live births during any time between 2000 and 2015 are shown.

Source: *WHO estimates*

The proportion of children infected with malaria parasites has been halved in endemic areas of Africa since 2000. Infection prevalence among children aged 2–10 years is estimated to have declined from 33% in 2000 (uncertainty interval [UI]: 31–35%); to 16% in 2015 (UI: 14–19%), with three quarters of this change occurring after 2005. Reductions were particularly pronounced in central Africa. Whereas high transmission was common across much of central and western Africa in 2000 (with *P. falciparum* infection prevalence in children aged 2–10 years [*Pf*PR_{2-10}] exceeding 50%), it is geographically limited in 2015 (**Figure 2.5**). The proportion of the population living in areas where *Pf*PR_{2-10} exceeds 50% has fallen from 33% (30–37%) to 9% (5–13%). Even with a large growth in underlying populations in stable transmission areas, this reduction in *Pf*PR_{2-10} has resulted in a 26% drop in the number of people infected, from an average of 171 million people with malaria infections in 2000 to 127 million in 2013. The population of areas experiencing very low transmission (*Pf*PR_{2-10} <1%) has increased sixfold since 2000, to 121 million (range: 110–133 million).

Figure 2.5 Estimated *P. falciparum* infection prevalence among children aged 2–10 years (*Pf*PR_{2-10}) in 2000 and 2015



API, annual parasite index; *Pf*PR, *P. falciparum* parasite rate
Source: *Malaria Atlas Project (18)*

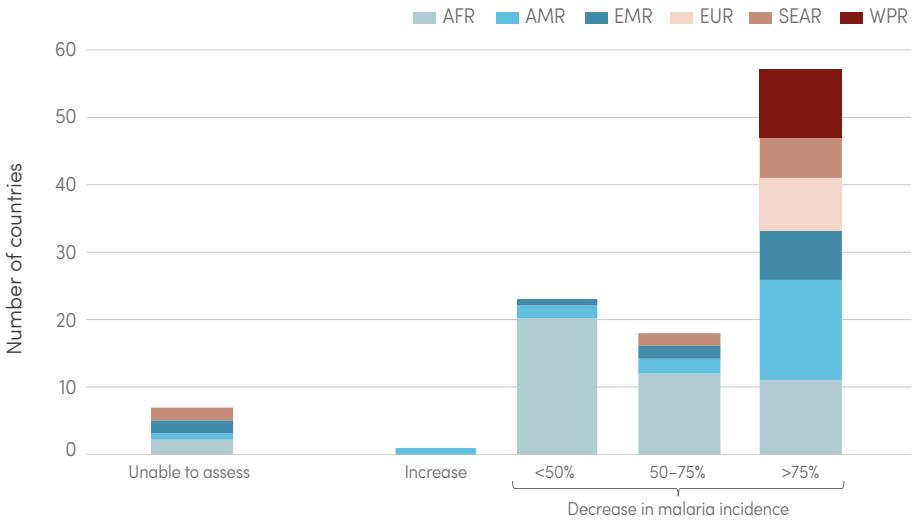
2.3 Estimated malaria cases and deaths averted, 2001–2015

It is estimated that a cumulative 1.2 billion fewer malaria cases and 6.2 million fewer malaria deaths occurred globally between 2001 and 2015 than would have been the case had incidence and mortality rates remained unchanged since 2000. Of the estimated 6.2 million fewer malaria deaths between 2001 and 2015, about 5.9 million (95%) were in children aged under 5 years. These deaths represent 13% of the 46 million fewer deaths from all causes in children aged under 5 years since 2000 (assuming under-5 mortality rates in 2000 remained unchanged during 2000–2015). Thus, reductions in malaria deaths contributed substantially to progress towards achieving the MDG 4 target of reducing the under-5 mortality rate by two thirds between 1990 and 2015. Not all of the cases and deaths averted can be attributed to malaria control efforts. Some progress is likely to be related to increased urbanization and overall economic development, which has led to improvements in housing and nutrition (see Section 3.7 for an estimate of the proportion of cases averted due to malaria interventions).

2.4 Country-level trends in malaria incidence and mortality

Of 106 countries with ongoing transmission of malaria in 2000, 57 are estimated to have reduced malaria case incidence by >75%. Substantial reductions in malaria incidence and mortality rates have occurred across the globe (Figure 2.6). The estimate of 57 countries comes from two sources of information. First, of the 106 countries that had ongoing malaria transmission in 2000, 67 have submitted data on malaria patients attending health facilities that were sufficiently complete and consistent to reliably assess trends between 2000 and 2014 (a description of the strategy used to analyse trends is provided in Annex 1).

Figure 2.6 Estimated change in malaria case incidence 2000–2015, by WHO region



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

Source: *WHO estimates*

Using this source, it is estimated that 55 countries have reduced malaria incidence rates by >75% in 2015, in line with RBM and World Health Assembly targets (**Table 2.4**). Second, for many high-burden countries in the WHO African and Eastern Mediterranean regions, where case confirmation and reporting remains variable, it is not possible to assess trends from routinely reported data on malaria. However, an increasing number of parasite prevalence surveys have been undertaken in sub-Saharan Africa and can be brought together in a geospatial model to map parasite prevalence and estimate trends in case incidence. Using this source for 32 countries, it is estimated that a further two countries have reduced malaria incidence rates by >75% in 2015, in line with RBM and World Health Assembly targets (**Table 2.5**). Thus, in total, 57 out of 106 countries with ongoing transmission in 2000 have reduced malaria incidence rates by >75%. A further 18 countries assessed by reported cases or modelling are estimated to have reduced malaria incidence rates by 50–75%.

Table 2.4 Summary of trends in reported malaria case incidence 2000–2015, by WHO region

WHO region	>75% decrease in incidence projected 2000–2015		50–75% decrease in incidence projected 2000–2015	<50% decrease in incidence projected 2000–2015	Increase in incidence 2000–2015	Insufficiently consistent data to evaluate trends 2000–2015	
African	Algeria Botswana Cabo Verde Eritrea Namibia Rwanda Sao Tome and Principe South Africa Swaziland		Ethiopia Zambia Zimbabwe	Madagascar		Angola Benin Burkina Faso Burundi Cameroon Central African Republic Chad Comoros[a] Congo Côte d'Ivoire Democratic Republic of the Congo Equatorial Guinea Gabon Gambia Ghana	Guinea Guinea-Bissau Kenya Liberia Malawi Mali Mauritania Mozambique Niger Nigeria Senegal Sierra Leone South Sudan Togo Uganda United Republic of Tanzania[b]
Americas	Argentina Belize Bolivia (Plurinational State of) Brazil Colombia Costa Rica Ecuador	El Salvador French Guiana, France Guatemala Honduras Mexico Nicaragua Paraguay Suriname	Dominican Republic Guyana	Panama Peru	Venezuela (Bolivarian Republic of)	Haiti	
Eastern Mediterranean	Afghanistan Iran (Islamic Republic of) Iraq Morocco	Oman Saudi Arabia Syrian Arab Republic				Djibouti Pakistan Somalia Sudan Yemen	
European	Armenia Azerbaijan Georgia Kyrgyzstan	Tajikistan Turkey Turkmenistan Uzbekistan					

WHO region	>75% decrease in incidence projected 2000–2015	50–75% decrease in incidence projected 2000–2015	<50% decrease in incidence projected 2000–2015	Increase in incidence 2000–2015	Insufficiently consistent data to evaluate trends 2000–2015
South-East Asia	Bangladesh Bhutan Democratic People's Republic of Korea Nepal Sri Lanka Timor-Leste	India Thailand			Indonesia Myanmar[c]
Western Pacific	Cambodia China Lao People's Democratic Republic Malaysia Papua New Guinea Philippines Republic of Korea Solomon Islands Vanuatu Viet Nam				

[a] Routinely reported data indicate a decrease of >75% in malaria case incidence between 2013 and 2014

[b] Routinely reported data indicate a decrease of 50–75% in malaria admissions rates in Zanzibar

[c] Routinely reported data indicate a decrease of >75% in malaria case incidence since 2008

Source: *National malaria control programme data*

Table 2.5 Summary of trends in estimated malaria case incidence 2000–2015, for countries in which trends could not be evaluated from reported data but can be assessed through modeling*

WHO region	>75% decrease in incidence projected 2000–2015	50%–75% decrease in incidence projected 2000–2015	<50% decrease in incidence projected 2000–2015	Increase in incidence 2000–2015
African	Guinea-Bissau Mauritania	Angola Burundi Congo Democratic Republic of the Congo Liberia Malawi Senegal Uganda United Republic of Tanzania	Benin Burkina Faso Cameroon Central African Republic Chad Côte d'Ivoire Equatorial Guinea Gabon Gambia Ghana Guinea Kenya Mali Mozambique Niger Nigeria Sierra Leone South Sudan Togo	
Eastern Mediterranean		Djibouti Sudan	Somalia	

* Trends could not be assessed by reported cases or modelling in 7 countries or areas: the Comoros, Haiti, Indonesia, Mayotte (France), Myanmar, Pakistan and Yemen

An increasing number of countries are moving towards elimination of malaria. Whereas only 13 countries were estimated to have fewer than 1000 malaria cases in 2000, a total of 33 countries are estimated to have achieved this milestone in 2015 (**Figures 2.7** and **2.8**). In 2014, 16 countries reported zero indigenous cases (Argentina, Armenia, Azerbaijan, Costa Rica, Iraq, Georgia, Kyrgyzstan, Morocco, Oman, Paraguay, Sri Lanka, Tajikistan, Turkey, Turkmenistan, United Arab Emirates and Uzbekistan). Another three countries and territories reported fewer than 10 indigenous cases in that year (Algeria, El Salvador and Mayotte [France]). Argentina and Kyrgyzstan have commenced the WHO process for certification of malaria elimination.

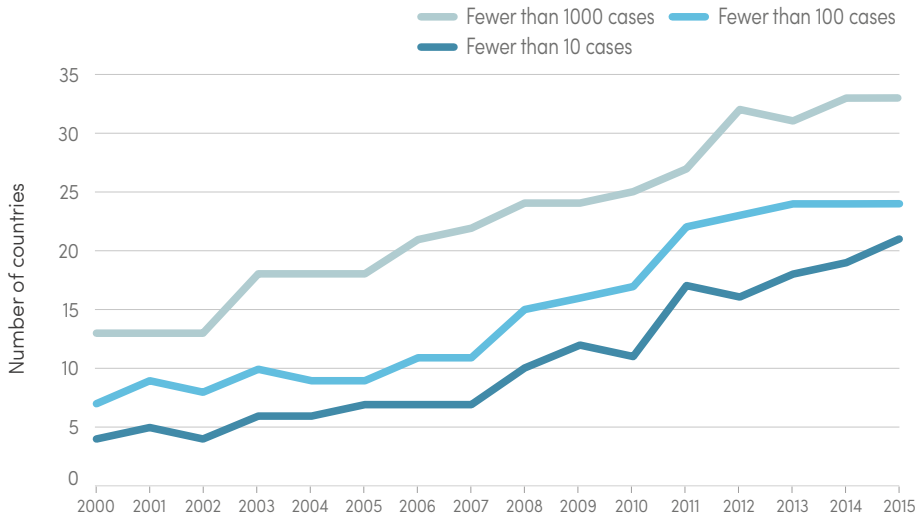
Figure 2.7 Estimated number of malaria cases in 2000 and 2015, by WHO region

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

Diamonds represent countries within each WHO region

Source: *National malaria control programme reports and WHO estimates*

Figure 2.8 Number of countries with fewer than 1000, 100 and 10 cases, 2000–2015



Source: *WHO estimates*

As of December 2015, there are 20 countries in the pre-elimination and elimination phases, and nine in the phase of prevention of malaria reintroduction (Table 2.6). This classification according to programme phase takes into account programme operations as well as malaria incidence (see Annex 1 for definitions of elimination and pre-elimination and prevention of reintroduction phases).

Table 2.6 Classification of countries by programme phase, December 2015

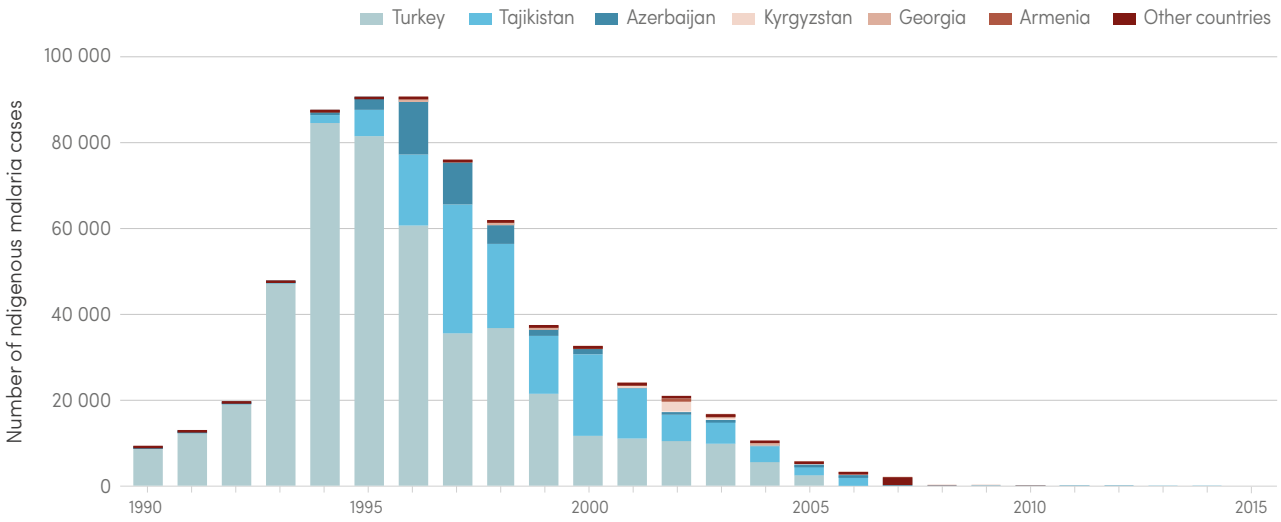
WHO region	Pre-elimination	Elimination	Prevention of reintroduction	Malaria free
African	Cabo Verde Swaziland	Algeria		
Americas	Belize Dominican Republic Ecuador El Salvador Mexico	Argentina Costa Rica Paraguay		
Eastern Mediterranean		Iran (Islamic Republic of) Saudi Arabia	Egypt Iraq Oman Syrian Arab Republic	Morocco – 2010 United Arab Emirates – 2007
European		Turkey Tajikistan	Azerbaijan Georgia Kyrgyzstan Uzbekistan	Turkmenistan – 2010 Armenia – 2012
South-East Asia	Bhutan Democratic People's Republic of Korea		Sri Lanka	
Western Pacific	Malaysia	China Republic of Korea		

Source: *National malaria control programme data*

2.5 Towards elimination of malaria in the WHO European Region

The WHO European Region reported zero indigenous cases for the first time in 2015, in line with the goal of the Tashkent Declaration to eliminate malaria from the region by 2015. The region comprises 53 countries and covers the European Union as well as the Balkan countries, the Russian Federation, Israel, Turkey and countries in South Caucasus and Central Asia. In 1975, the WHO European Region, excepting Turkey, was considered malaria free. In Turkey, the incidence of malaria had been reduced to 1263 cases in 1970 (*19*), but the incidence increased to 9828 cases in 1975, and to 115 385 cases in 1977. The increases were linked to agricultural development and insecticide resistance in the Çukurova and Amikova plains of southern Turkey. The epidemic was steadily controlled, with 8675 cases reported in 1990. A subsequent increase in cases was linked to the first Gulf war and an influx of refugees from Iraq, with 84 321 cases reported in 1994 and 81 754 in 1995 (**Figure 2.9**). In the Caucasus and the Central Asian republics, and to a lesser extent in the Russian Federation, an increase in imported cases in the late 1980s and early 1990s, linked to the war in Afghanistan and the dissolution of the Soviet Union, was followed by re-establishment of local transmission. In total, nine countries were affected: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan. The countries worst affected were Azerbaijan, with 13 135 cases reported in 1996, and Tajikistan, with 29 794 reported cases in 1997. As a result of large-scale epidemics in Azerbaijan, Tajikistan and Turkey, the number of reported cases in the region peaked at 90 712 in 1995 (**Figure 2.9**). Most cases were due to *P. vivax*, although *P. falciparum* was noted in Tajikistan in the mid-1990s. The WHO European Region also suffered an outbreak in Bulgaria in 1995–1996, when 18 locally acquired cases of *P. vivax* malaria were reported – a situation that was swiftly controlled.

Figure 2.9 Indigenous malaria cases in the WHO European Region, by country, 1990–2015



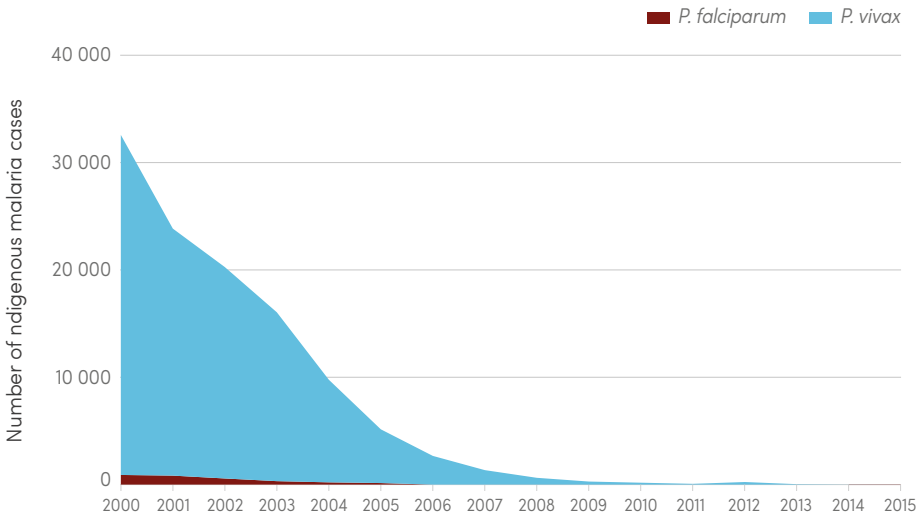
Source: *National malaria control programme reports and WHO estimates*

In 2005, affected countries made a joint commitment to eliminate malaria by 2015. Control efforts across affected countries in the WHO European Region had reduced the number of indigenous cases to 32 394 in 2000 and to 5072 in 2005 (**Figure 2.10**). Malaria incidence was at a level such that the goal of interruption of transmission had become feasible throughout the region. With this goal in sight, the ministers of health of Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkey, Turkmenistan and Uzbekistan made a commitment through the Tashkent Declaration in 2005 to eliminate malaria from the region by 2015.

Falling to zero malaria indigenous cases. In addition to high-level political support, and intense programmatic efforts within affected countries, the elimination effort benefited from technical support from WHO and from financial assistance from the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) starting in 2003, with a total of 11 grants to five countries (Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Uzbekistan). The total number of reported indigenous malaria cases in the WHO European Region continued to decline, with just 179 indigenous cases in six countries in 2010. The last indigenous case of *P. falciparum* malaria in the region was reported in Tajikistan in 2009. Armenia and Turkmenistan were certified malaria free in October 2010 and September 2011, respectively. However, the years 2011 and 2012 saw renewed malaria transmission – in Georgia (isolated cases) and in Greece and Turkey (localized outbreaks), as a result of malaria importation from other endemic countries (Afghanistan, India and Pakistan). These resurgences were brought under control and the number of indigenous cases in the region fell to zero in 2015.

Maintaning zero cases. The achievement of zero indigenous malaria cases in the WHO European Region is fragile. Although zero cases were reported in 2015, there is still a possibility of cases with a long incubation period arising in 2016. Moreover, the region is subject to continual importation of cases from other endemic regions, which brings the threat of re-establishment of transmission. Maintaining zero indigenous cases will require continued political commitment, constant vigilance against the risks of re-establishment, and further investments to strengthen health systems to ensure that any resurgence can be rapidly contained.

Figure 2.10 Indigenous malaria cases in the WHO European Region by parasite species, 2000–2015



Source: *National malaria control programme reports and WHO estimates*

2.6 Towards malaria elimination in other WHO regions

In the WHO African Region, Algeria is in the elimination phase. No indigenous cases were recorded in 2014, and of the 266 cases reported, 260 were imported (the remaining six were not classified and it is possible that some were indigenous). This represents a sharp decrease in indigenous cases compared to the number in 2012, when 55 indigenous and three introduced cases were reported. Cabo Verde has been in the pre-elimination phase since 2010. The island reported only 46 cases in 2014, of which 20 were imported and 26 locally acquired. Other islands have also reported relatively low numbers of cases in recent years. Zanzibar (United Republic of Tanzania) reported 2600 confirmed and 1646 presumed cases in 2014, which represents an increase over 2013 (2194 confirmed cases and 354 presumed). The Comoros reported a substantial reduction in confirmed malaria cases – from 53 156 in 2013 to 2203 in 2014 – following mass drug administration with dihydroartemisinin-piperaquine plus primaquine and large-scale distribution of long-lasting insecticidal nets (LLINs).

Four countries of the Elimination 8 (E8) regional initiative (Botswana, Namibia, South Africa and Swaziland) have a goal to eliminate malaria by 2015. However, three of these countries reported increases in the number of confirmed malaria cases in 2014 compared to the number in 2013 (Botswana from 456 to 1346, Namibia from 4911 to 15 914 and South Africa from 8645 to 11 705). In Swaziland, which is in the pre-elimination phase, the number of confirmed cases decreased from 962 in 2013 to 711 in 2014; this still represents an increase over 2012 (562 cases reported), although this may in part be attributed to increased use of diagnostic testing. Of note, of the 606 cases investigated in 2014, some 322 were considered to have been imported. With continued investments in malaria control, especially in diagnostic capacity, it is expected that these countries will continue to progress towards elimination.

In the WHO Region of the Americas, Argentina has reported zero indigenous cases since 2011. In 2015, the country underwent a first assessment as part of the process for certification as free of malaria. Paraguay has reported zero indigenous cases since 2012, and eight imported cases in 2014. Costa Rica reported zero indigenous cases in both 2013 and 2014 (but with five imported and one relapsing in 2014).

Two countries in the pre-elimination phase reported a decrease of indigenous cases between 2013 and 2014: Belize (from 20 to 19 cases, all of which were *P. vivax* infections); and Ecuador (from 544 to 368 cases, with both *P. vivax* and *P. falciparum* infections). The number of indigenous cases remained constant in El Salvador at six (all *P. vivax* infections), while in Mexico the number increased from 495 in 2013 to 656 in 2014 (all *P. vivax*) infections. Ten countries in Central America and the Caribbean (Belize, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua and Panama) have joined a regional initiative that aims to eliminate malaria by 2020, with the support of the Global Fund.

In the WHO Eastern Mediterranean Region, the downward trend of indigenous cases has continued in the two countries in the elimination phase – the Islamic Republic of Iran (358 cases in 2014 from 479 cases in 2013) and Saudi Arabia (30 cases in 2014 from 34 cases in 2013). The Islamic Republic of Iran has been in the elimination phase since 2010 and Saudi Arabia since 2008, respectively. Four countries achieved zero indigenous cases some years ago (Egypt in 1998, Iraq in 2009, Oman in 2004 and the Syrian Arab Republic in 2005), and are now attempting to prevent reintroduction. Iraq and the Syrian Arab Republic did not report indigenous cases in 2014, but information from the latter country is limited. Oman achieved interruption of transmission in 2004–2006 and is currently applying a prevention of reintroduction strategy,

with vigilance of general health services and case-based surveillance. Since 2007, Oman has been battling small outbreaks related to imported cases; the country reported 986 imported and 15 introduced cases in 2014. Egypt reported 22 locally acquired cases in 2014.

In the WHO South-East Asia Region, the last indigenous malaria case in Sri Lanka was reported in October 2012; the country is now in the prevention of reintroduction phase, showing tremendous progress from a baseline of 210 039 cases in 2000. The two countries in the pre-elimination phase (Bhutan and the Democratic People's Republic of Korea) showed a decline in the number of indigenous *P. vivax* cases in 2013. In Bhutan, only 19 indigenous cases were recorded (against 15 indigenous cases and 30 introduced cases in 2013). However, in the Democratic People's Republic of Korea, the numbers were considerably greater – 10 535 cases in 2014 (14 407 in 2013) – and the number of people exposed to risk in active foci is still high (11.7 million), representing 47% of the total population.

In the WHO Western Pacific Region, China is progressing rapidly towards malaria elimination, and in 2015 it moved to the elimination phase. It reported only 56 indigenous cases in 2014, down from 86 in 2013 and 244 in 2012. Transmission continues in limited areas, particularly in border areas of Yunnan (a shared border with the Lao People's Democratic Republic and Myanmar) and Tibet. China has a large number of imported cases, 2864 in 2014, primarily from sub-Saharan Africa but also from neighbouring Laos and Myanmar. The Republic of Korea, also in elimination phase, saw an increase in the number of indigenous cases from 383 in 2013 to 557 in 2014. A large number of people are at risk, although programmatically the country continues to meet the surveillance and treatment criteria for the nationwide elimination phase. Malaysia is in the pre-elimination phase and continues to progress towards elimination, reporting 606 indigenous cases in 2014 (*P. falciparum*, *P. vivax* and *P. malariae* infections), down from 1092 in 2013. Malaria transmission in Malaysia is geographically limited, mainly to districts in Sarawak and Sabah, but 1.3 million people still live in active foci. Malaysia also faces an increasing threat of zoonotic malaria infection, with 2551 indigenous cases of *P. knowlesi* infection reported in 2014, representing 81% of all locally acquired cases reported in that year. The Philippines is continuing its subnational elimination approach, and by 2014 had declared 28 (35%) of its 81 provinces malaria free. In 2014, it reported a total of 4903 confirmed malaria cases, a decrease since 2013 and 2012 (from 6514 and 7133 cases, respectively).

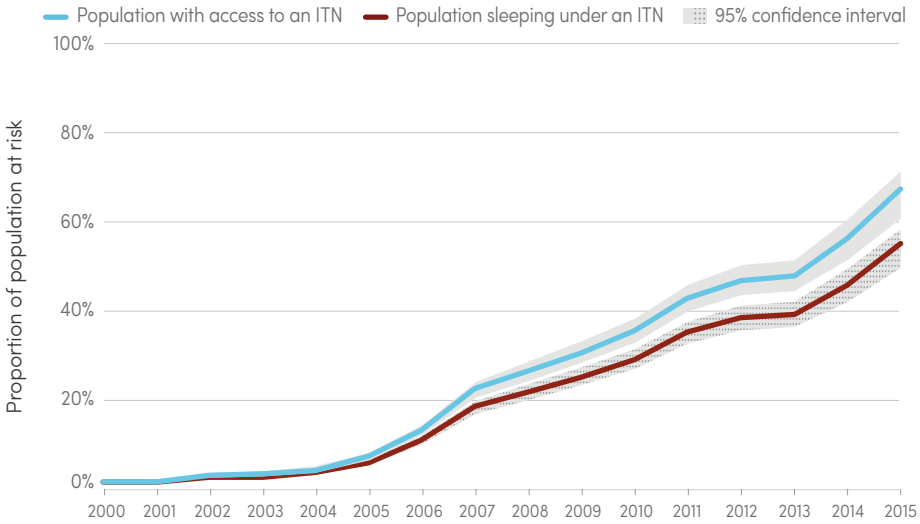
Malaria elimination in the Greater Mekong subregion. In response to the threat of multidrug resistance, including resistance to ACT among *P. falciparum* parasites, and taking into account recent improvements in malaria control, four countries in the Greater Mekong subregion (Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam) have established a *Strategy for Malaria Elimination in the Greater Mekong subregion (2015–2030).* The ultimate goal of the strategy is to eliminate *P. falciparum* malaria by 2025, and all malaria by 2030, in all countries in the Greater Mekong subregion. This strategy prioritizes the rapid interruption of transmission in areas affected by multidrug resistance, including resistance to ACT. In areas and countries where transmission has been interrupted, the goal will be to maintain malaria-free status and address imported malaria.

3. Coverage of key interventions

3.1 Insecticide-treated mosquito nets

The proportion of the population sleeping under an ITN has increased dramatically in sub-Saharan Africa since 2000. Most malaria endemic countries have adopted policies promoting universal access to ITNs. However, ITNs have been most widely deployed in Africa, which has the highest proportion of the population at risk of malaria, and has malaria vectors most amenable to control with ITNs. Based on data from household surveys and reports from manufacturers and national malaria control programmes (NMCPs), the proportion of the population sleeping under an ITN has increased markedly in sub-Saharan Africa, from less than 2% in 2000 to an estimated 46% in 2014 (95% CI: 42–50%) and 55% in 2015 (95% CI: 50–58%) (**Figure 3.1**). The proportion of children aged under 5 years in sub-Saharan Africa sleeping under an ITN increased to an estimated 68% (95% CI: 61–72%) in 2015. Although these results represent a substantial increase since 2000, they fall short of universal (100%) coverage of this preventive measure. The continent-wide estimates of those sleeping under an ITN obscure variations in progress among and within countries. For example, in 2015, the median proportion of the population sleeping under an ITN was 74% among the five countries with the highest estimates and 20% among the five countries with the lowest estimates (**Figure 3.2**).

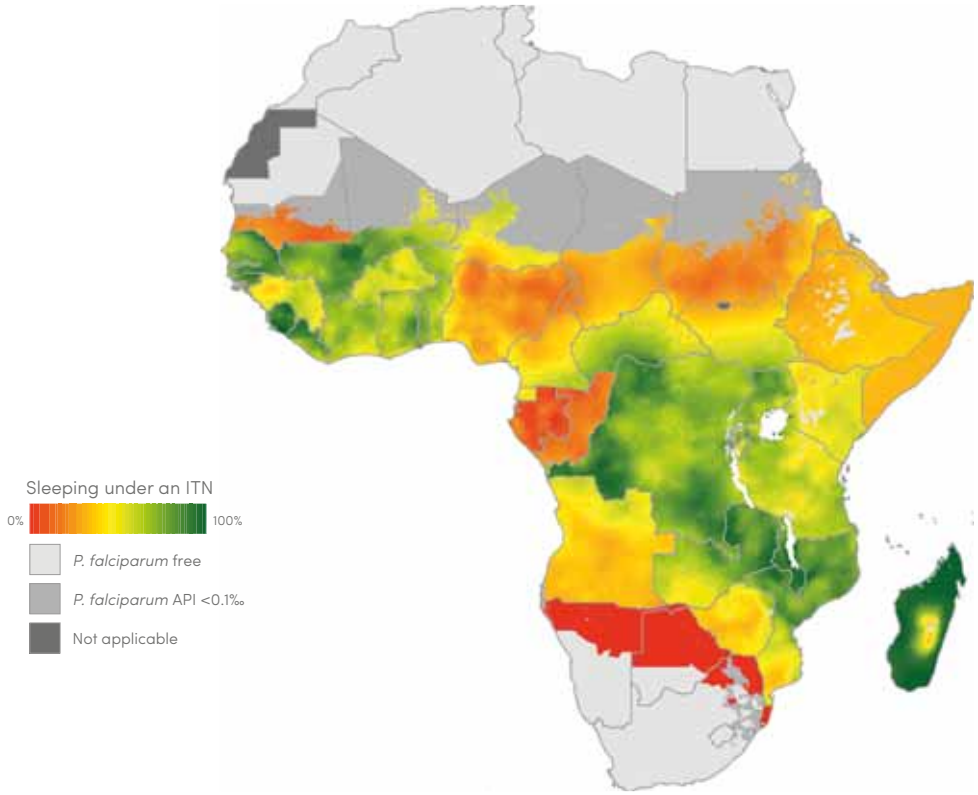
Figure 3.1 Proportion of population at risk with access to an ITN and proportion sleeping under an ITN, sub-Saharan Africa, 2000–2015



ITN, insecticide-treated mosquito net

Source: *Insecticide-treated mosquito net coverage model from Malaria Atlas Project (20), with further analysis by WHO*

Figure 3.2 Proportion of population sleeping under an ITN, sub-Saharan Africa, 2015



API, annual parasite index; ITN insecticide-treated mosquito net
Source: *Insecticide-treated mosquito net coverage model from Malaria Atlas Project (20)*

The rise in the proportion of the population sleeping under an ITN is driven by increasing access to ITNs in the household. The proportion of the population with access to an ITN in their household increased to 56% in 2014 (95% CI: 51–61%) and 67% in 2015 (95% CI: 61–71%) (Figure 3.1). This is a substantial increase from the less than 2% with access to an ITN in 2000 but it is still lower than the universal (100%) access called for in the updated GMAP targets. In sub-Saharan Africa, estimates suggest that, overall, a high proportion (about 82%) of those with access to an ITN sleep under an ITN. Thus, while encouraging consistent ITN use among those who have access remains important, ensuring access to ITNs for those who do not have them is the highest priority activity to increase the population protected by this intervention.

An increasing number of ITNs have been delivered to sub-Saharan African countries, but those numbers are still insufficient to achieve universal access. Most nets delivered by manufacturers to countries are subsequently distributed by NMCPs to households. The number of nets delivered by manufacturers in a given year usually does not exactly match the number distributed by NMCPs, because of delays between delivery to the country and distribution through campaigns. About 143 million LLINs were delivered to countries in sub-Saharan Africa in 2013, over 189 million were delivered in 2014, and at least 154 million

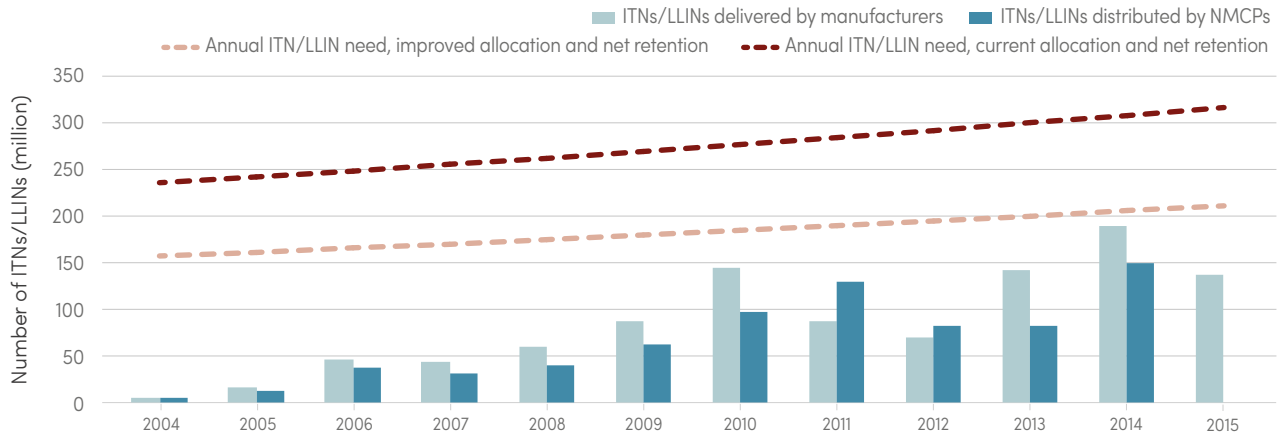
are projected to be delivered in 2015 (**Figure 3.3**). In recent years, most nets delivered have been LLINs. The 189 million nets delivered in 2014 represent the highest number delivered in a single year. This figure approaches the estimated 200 million nets required each year to achieve universal access to ITNs, if nets were allocated to households with maximum efficiency (i.e. every household received the exact number of nets required for 100% access within households) and nets were retained in households for at least 3 years. However, this is the best-case scenario; in reality, based on the current distribution patterns of nets in households and the loss of nets estimated from distribution and survey data, as many as 300 million new nets would be required each year to ensure that all persons at risk of malaria had access to an LLIN in countries in which the use of LLINs is the primary method of vector control.

3.2 Indoor residual spraying

The WHO African Region had the largest number of persons and the largest proportion of the population at risk protected by IRS in 2014, but coverage rates have declined in recent years. NMCPs often target only selected populations for IRS; however, the number and proportion of persons protected by IRS among the total population at risk allows for a comparison of the extent to which IRS is used across countries and regions. NMCPs reported that about 116 million people worldwide were protected by IRS in 2014. This comprises 50 million people in the WHO African Region, and 49 million people in the WHO South-East Asia Region, of whom over 44 million were in India. The proportion of the population at risk protected by IRS has declined globally from a peak of 5.7% in 2010 to 3.4% in 2014, with decreases seen in all regions except the WHO Eastern Mediterranean Region (**Figure 3.4**). The proportion of the population at risk protected by IRS was 6% in all of sub-Saharan Africa in 2014, and 70% in countries where IRS is the primary method of vector control. The decrease in the number of people protected by IRS in Africa was largely due to changes in just a few countries, most notably Ethiopia, which accounted for one third of the population protected by IRS in Africa in 2013.

There has been a shift away from using pyrethroids for IRS. Of the 53 countries that reported the insecticide classes sprayed in 2014, 29 had used pyrethroids only, 14 had used pyrethroids and one or two other classes, and 10 had used non-pyrethroids only. Carbamates were the most commonly

Figure 3.3 Number of ITNs/LLINs delivered and distributed, and the estimated number of LLINs needed annually to achieve universal access in sub-Saharan Africa, 2004–2015

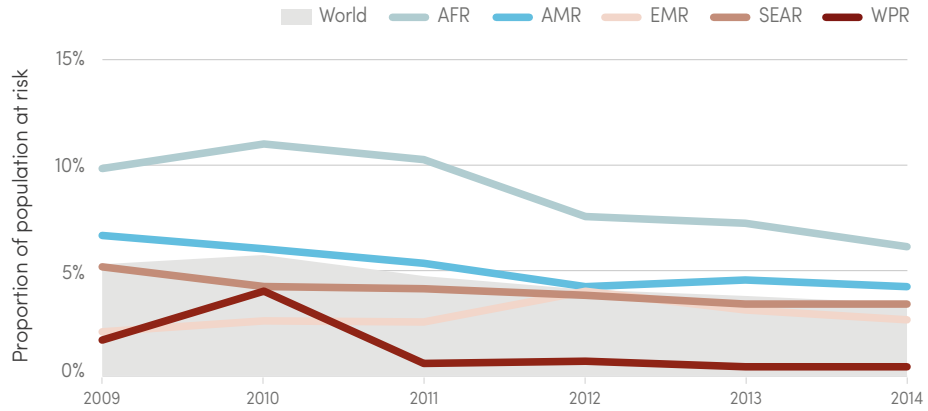


ITN, insecticide-treated mosquito net; LLIN, long-lasting insecticidal net; NMCP, national malaria control programme
Annual need for universal access was calculated under two scenarios: (1) current durability and net distribution patterns are maintained and (2) every net lasts 3 years and each household receives the exact number of nets it needs.
Source: *NMCP reports and Milliner Global Associates*

used non-pyrethroid, and were sprayed in 13 countries, of which six used this class alone. Reductions in overall IRS coverage may be attributed to spraying with the more expensive non-pyrethroids as a result of both widespread pyrethroid resistance and large-scale use of ITNs. The current WHO recommendation for resistance management in areas with LLINs is additive spraying, with non-pyrethroids used on a rotational basis (*21*).

In Africa, over half the population at risk had access to an ITN or were protected by IRS in 2014. Combining data reported by NMCPs – the modelled proportion of the population with access to an ITN in a household and the proportion of persons protected by IRS – and accounting for households that may receive both interventions, the proportion of the population for whom vector control had been made available was estimated at 59% in 2014. The proportion exceeded 80% in nine countries (**Figure 3.5**). Although the proportion protected by ITNs generally exceeds the proportion protected by IRS, in some countries IRS is the primary vector control measure; in 2014 it accounted for more than 80% of vector control coverage in six countries.

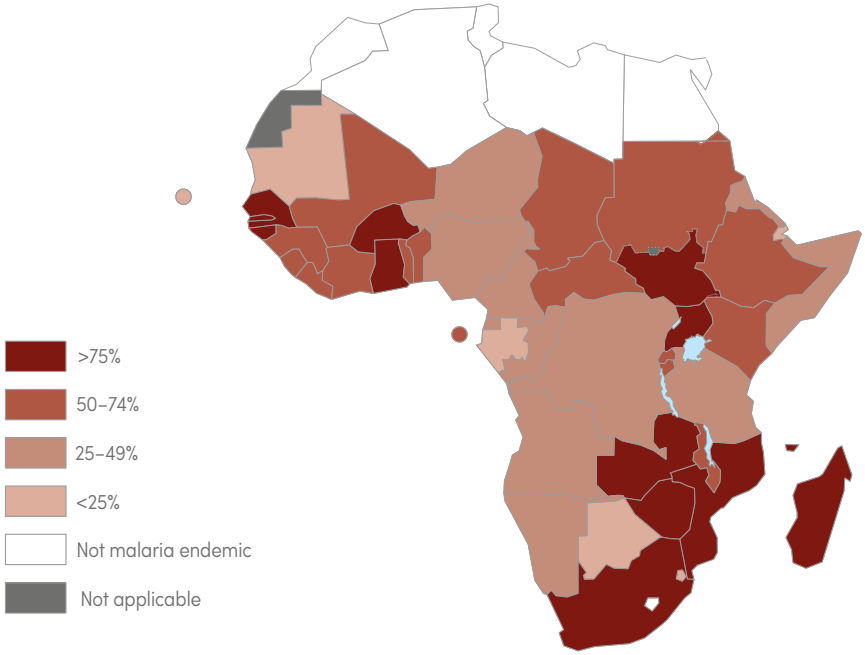
Figure 3.4 Proportion of the population at risk protected by IRS by WHO region, 2009–2014



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

Source: *National malaria control programme reports*

Figure 3.5 Proportion of the population protected by IRS or with access to ITNs in sub-Saharan Africa, 2014



Source: *National malaria control programme reports and insecticide-treated mosquito net coverage model from Malaria Atlas Project (20), with further analysis by WHO*

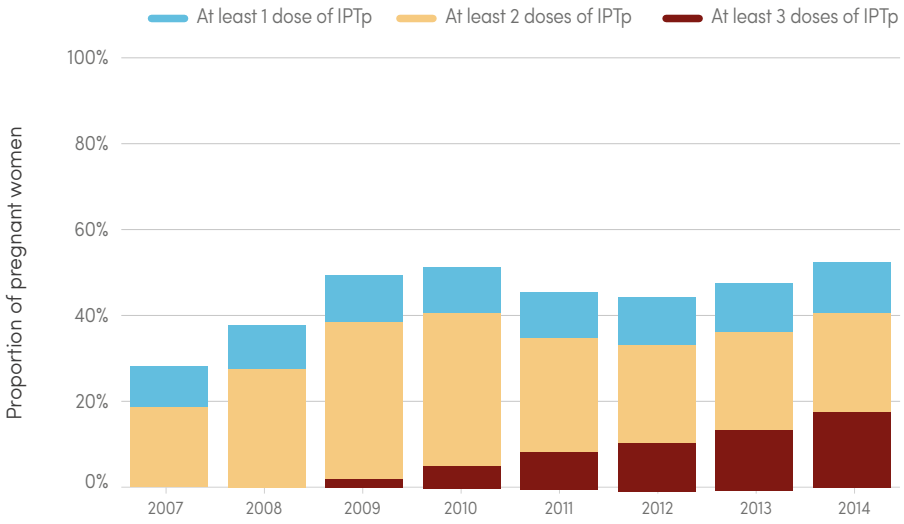
3.3 Larval control

Larval control as a malaria intervention is used by at least 48 countries globally. Such control involves vector habitat modification or manipulation, larviciding and biological control (e.g. use of fish as larval predators). In 2014, some 48 countries reported using at least one of these methods of larval control, 10 more countries than in the previous year. Thirty-two countries reported use of vector habitat modification or manipulation, and 45 countries reported use of biological control or chemical larviciding. The scale of the larval control activities was not reported, and it is difficult to quantify the impact of this intervention.

3.4 Preventive therapies for malaria

The proportion of pregnant women receiving at least one dose of IPTp has increased in recent years, but was still only 52% in 2014. The 2014 WHO policy update for IPTp recommends that doses should be delivered at each antenatal care (ANC) visit after the first trimester (the schedule should follow the recommended number of ANC visits), with a minimum of three doses received during each pregnancy. Using data reported by NMCPs and United Nations (UN) population estimates for the 36 African countries in which the policy has been adopted, it is estimated that 52% of eligible pregnant women received at least one dose of IPTp in 2014, while 40% received two or more doses and 17% received three or more doses in 2014 (Figure 3.6). The proportion of women receiving one, two or three doses has increased after the WHO recommendation of October 2012 that IPTp be given at each scheduled antenatal visit after the first trimester. Despite this recent increase, the proportion of women receiving one and two doses remains at 2010 levels, having dropped between 2011 and 2012. The proportion of women receiving IPTp varied across the continent, with 10 countries reporting more than 60% of pregnant women receiving one or more doses and another nine countries reporting more than 80% receiving one or more doses (Figure 3.7).

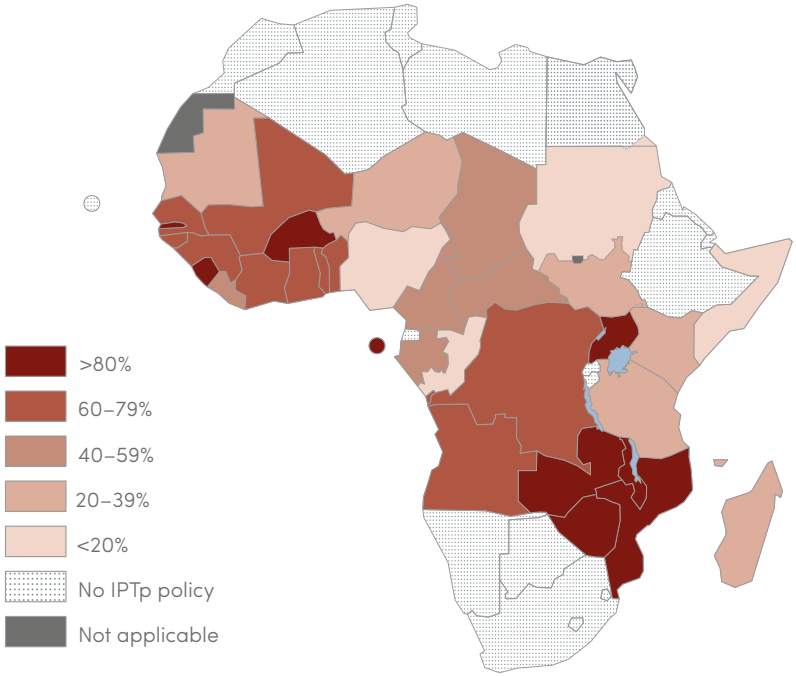
Figure 3.6 Proportion of pregnant women receiving IPTp, by dose, sub-Saharan Africa, 2007–2014



IPTp, intermittent preventive treatment in pregnancy

Source: *WHO estimates using national malaria control programme reports and United Nations population estimates*

Figure 3.7 Proportion of pregnant women receiving at least one dose of IPTp, sub-Saharan Africa, 2013–2014



The following country-years are shown in the map due to missing data for 2013 and 2014: Gabon (2011), Somalia (2011), Sudan (2009).

Source: *WHO estimates using national malaria control programme reports and United Nations population estimates*

Adoption and implementation of chemoprevention in children has been limited. As of 2014, six of the 15 countries for which WHO recommends SMC (Chad, the Gambia, Guinea, Mali, Niger and Senegal) had adopted the policy, while another two outside the Sahel subregion – Congo and Togo – also reported that the policy had been adopted. Additionally, there have been reports of subnational SMC implementation taking place across the subregion. Only one country, Chad, reported adoption of an IPTi policy in 2014. WHO recommended these interventions relatively recently: IPTi in 2010 and SMC in 2012. Over recent years, financial resources for IPTi and SMC have begun to materialize, which may help provide an adequate supply of the required drugs and a trained workforce to reach those children who would benefit from these interventions.

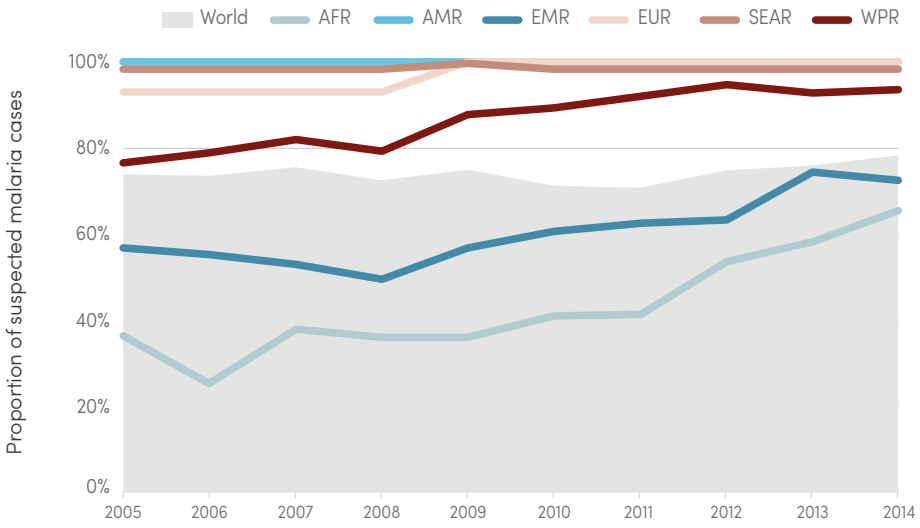
Pilot implementation of the first malaria vaccine was recommended by WHO advisory groups. The malaria vaccine, RTS,S/AS01, received a positive scientific opinion from the European Medicines Agency under Article 58 of Regulation (EC) No 726/2004, indicating that, in their assessment, the quality of the vaccine and the risk–benefit profile is favourable from a regulatory perspective. The vaccine requires administration of four doses, the first three at monthly intervals, and the fourth given 18 months after the third dose. During the 4-year study period, in children aged 5–17 months who received the vaccine, efficacy against clinical malaria was 39.0% (95% CI: 34.3–43.3%), and against severe malaria was 31.5% (95% CI: 9.3–48.3%). Vaccine efficacy against all-cause hospitalization was 14.9% (95% CI: 3.6–24.8%) (*10*). The extent to which the protection demonstrated in the Phase 3 trial can be replicated in the context of the routine health system is uncertain, especially given that implementing a four-dose schedule may require new immunization contacts. SAGE and the MPAC recommended that these issues be further assessed through large-scale implementation projects. WHO has adopted these recommendations and is now actively working with financing bodies, and the malaria vaccine clinical trials partnership (including PATH and GSK) to mobilise the financial support for the pilots, and to finalise design of the pilot implementation programme.

3.5 Diagnostic testing

The proportion of suspected malaria cases receiving a malaria diagnostic test has increased steadily since 2005. Since 2010, WHO has recommended that all persons with suspected malaria in all settings should undergo malaria diagnostic testing, by either microscopy or rapid diagnostic test (RDT). The proportion of suspected malaria cases receiving a parasitological test among patients presenting for care in the public sector can be calculated from information on diagnostic testing and malaria cases reported by NMCPs. The global trend is dominated by countries in South-East Asia, particularly India, which undertakes a high number of diagnostic tests. Three WHO regions – the Region of the Americas, the European Region and the South-East Asia Region – have had consistently high levels (at least 90% of suspected cases tested) of malaria diagnostic testing since 2005. Malaria diagnostic testing has increased steadily in the WHO Western Pacific Region and the WHO Eastern Mediterranean Region in recent years. The WHO African Region has had the largest increase in levels of malaria diagnostic testing, from 36% of suspected malaria cases tested in 2005 to 41% in 2010, and 65% in 2014 (Figure 3.8). The increase in malaria diagnostic testing in the WHO African Region is due mainly to an increase in the use of RDTs, which accounted for 71% of diagnostic testing among suspected cases in 2014. More than 120 million slide examinations were undertaken in India in 2014 accounting for 29% of the global number of tests performed in 2014.

The level of malaria diagnostic testing is lower among febrile children seeking care in the private sector than in the public sector. Data reported by NMCPs provide information on diagnostic testing among patients of all ages presenting for care in the public sector. Household surveys can provide information on diagnostic testing among febrile children aged under 5 years across all sources of care, including the private sector, which comprises a range of providers offering various levels of training and services. The formal private sector comprises private hospitals and clinics, whereas the informal private sector comprises pharmacies, kiosks and traditional healers. Among 18 nationally representative surveys conducted in sub-Saharan Africa from 2013 to 2015, a higher proportion of febrile children sought care in the informal private sector than in the formal private sector (Figure 3.9). The proportion of

Figure 3.8 Proportion of suspected malaria cases attending public health facilities that received a diagnostic test, by WHO region, 2005–2014



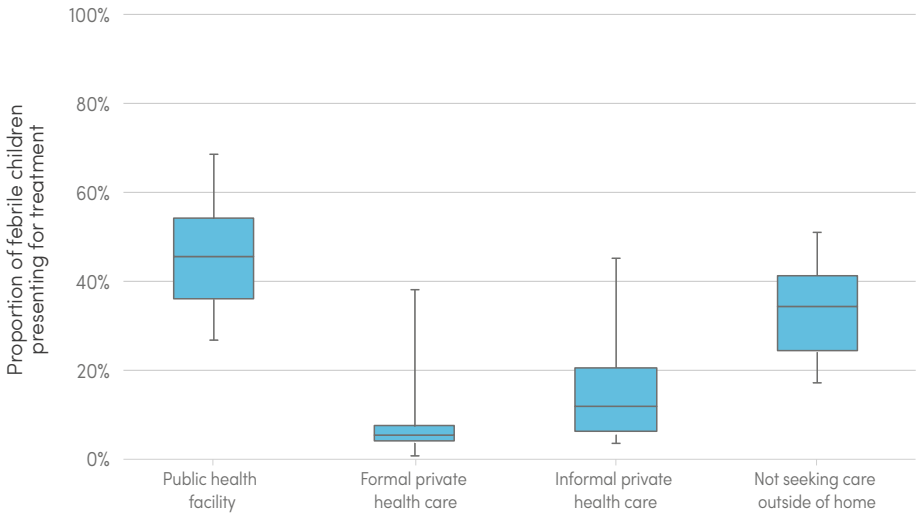
AFR, African Region; AMR, Region of the Americas; EMR, Eastern Mediterranean Region; EUR, European Region; SEAR, South-East Asia Region; WPR, Western Pacific Region

Source: *National malaria control programme reports*

febrile children who received a finger or heel stick, indicating that a malaria diagnostic test was performed, was greater in the public sector (median: 53%; interquartile range [IQR]: 35–57%) than in both the formal (median: 36%; IQR: 20–54%) and the informal private sectors (median: 6%; IQR: 3–9%) (**Figure 3.10**). Although diagnostic testing measured through household surveys is not directly comparable to that reported by NMCPs, the proportion of suspected malaria cases (of all ages) receiving a diagnostic test reported by NMCPs between 2012 and 2014 (53–65%) overlaps with the IQR of the proportion of febrile children who received a malaria diagnostic test in the public sector, as measured by household surveys in recent years (35–57%).

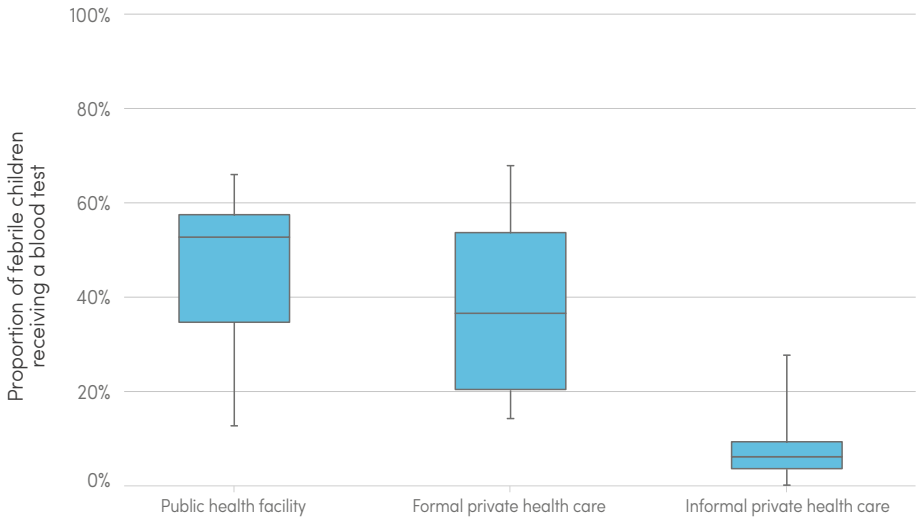
Testing of suspected malaria cases has risen, with an increasing number of RDTs supplied by manufacturers and distributed by NMCPs. Sales of RDTs reported by manufacturers rose from fewer than 50 million globally in 2008 to 320 million in 2013, but dipped slightly to 314 million in 2014, mainly because

Figure 3.9 Proportion of febrile children presenting for treatment, by health sector, sub-Saharan Africa, 2013–2015



Source: *Nationally-representative household survey data from demographic and health surveys and malaria indicator surveys*

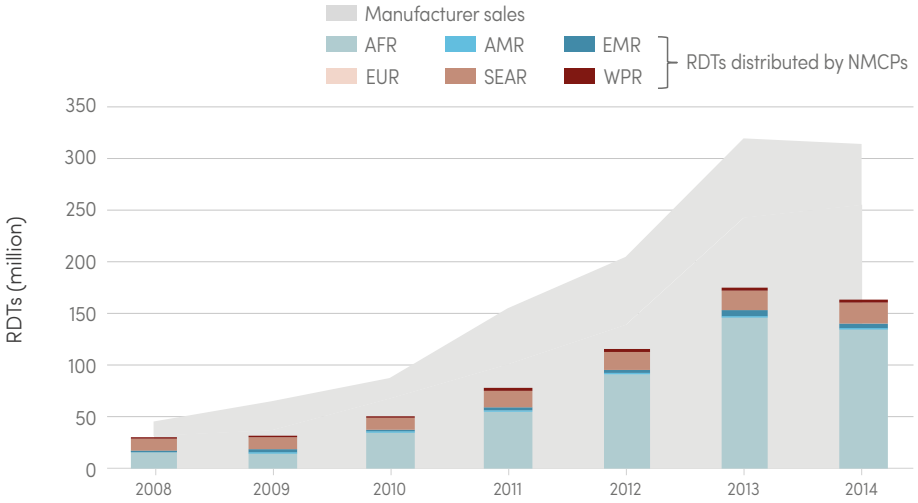
Figure 3.10 Proportion of febrile children receiving a blood test, by health sector, sub-Saharan Africa, 2013–2015



Source: *Nationally-representative household survey data from demographic and health surveys and malaria indicator surveys*

of a reduction in sales outside of Africa (**Figure 3.11**). About 62% of these RDTs were *P. falciparum*–specific tests, and 38% were combination tests that can detect more than one species of the malaria parasite. RDT sales reported by manufacturers represent global totals delivered to both public and private health sectors; the proportion delivered by manufacturers to each sector in each WHO region is not known. RDTs distributed by NMCPs represent tests in the public sector, and have followed a similar trend to total global sales. They rose from fewer than 30 million distributed in 2008 to nearly 175 million in 2013, then dipped slightly to 163 million in 2014. The sale and distribution of RDTs will need to increase if universal access to malaria diagnostic testing is to be achieved. Although the number of RDTs distributed fell slightly, the quality of RDTs has improved and remained high following an RDT product-testing programme conducted by WHO, the Foundation for Innovative New Diagnostics (FIND) and the United States Centres for Disease Control and Prevention (CDC) (*22*).

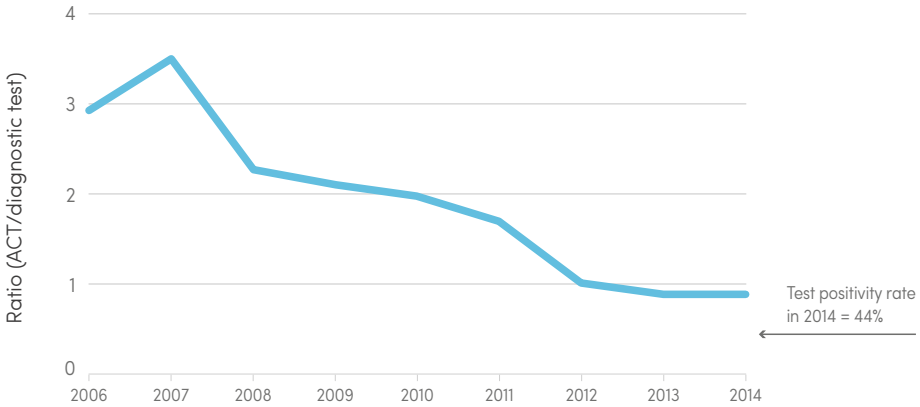
Figure 3.11 Number of RDTs sold by manufacturers and distributed by NMCPs, by WHO region, 2005–2014



AFR, African Region; AMR, Region of the Americas; EMR, Eastern Mediterranean Region; EUR, European Region; NMCP, national malaria control programme; RDT, rapid diagnostic test; SEAR, South-East Asia Region; WPR, Western Pacific Region

Source: *NMCP reports and data from manufacturers eligible for the WHO Foundation for Innovative new Diagnostics/US Centers for Disease Control and Prevention Malaria Rapid Diagnostic Test Product Testing Program*

Figure 3.12 Ratio of ACT treatment courses distributed to diagnostic tests performed (RDTs or microscopy), WHO African Region, 2006–2014



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

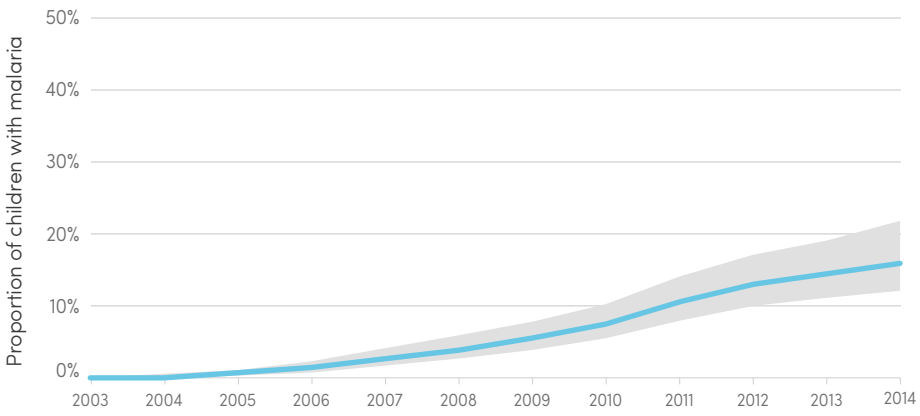
Source: National malaria control programme reports

The total number of ACT treatments distributed in the public sector is now fewer than the number of malaria diagnostic tests provided in sub-Saharan Africa. If the WHO policy of diagnostic testing for malaria before commencing treatment with antimalarial medicines is followed, the total number of diagnostic tests performed (through RDTs and microscopy) should exceed the number of malaria treatments provided by a considerable margin (because only test-positive patients should receive antimalarial treatments). Up until 2012, however, the number of tests undertaken in sub-Saharan Africa was less than the number of antimalarial medicines distributed, indicating that many patients were being treated with antimalarial medicines without receiving a diagnostic test. The decreasing ratio of treatments to tests in the public sector is an encouraging trend (Figure 3.12). However, there is still scope for improvement because the ratio of treatments to tests should approximate the test positivity rate, which is less than 44% across all countries in sub-Saharan Africa. Efforts to increase the proportion of suspected malaria cases tested start with appropriate RDT procurement.

3.6 Malaria treatment

The proportion of children in sub-Saharan Africa with *P. falciparum* malaria receiving an ACT is estimated to have increased since 2000, but access to treatment remains poor. Using (a) household survey data that identified children with a recent fever who had a positive RDT and who received antimalarial treatment; and (b) information on the number of ACT treatments distributed by NMCPs, it is possible to estimate the proportion of children with *P. falciparum* malaria who received an ACT or other antimalarial medicine. This estimation is only possible in sub-Saharan Africa where there are sufficient household surveys, but it is also most relevant in this region where childhood malaria represents a substantial proportion of all cases. The proportion of children aged under 5 years, with *P. falciparum* malaria and who received an ACT, is estimated to have increased from less than 1% through 2005 to 16% in 2014 (range: 12–22%) (Figure 3.13). This proportion falls substantially short of the target of universal access for malaria case management, as envisaged in the GMAP. A primary reason is that a high proportion of children with fever are not taken for care or use the informal private sector, where they are

Figure 3.13 Estimated proportion of children aged under 5 years with confirmed *P. falciparum* malaria who received ACTs, sub-Saharan Africa, 2003–2014

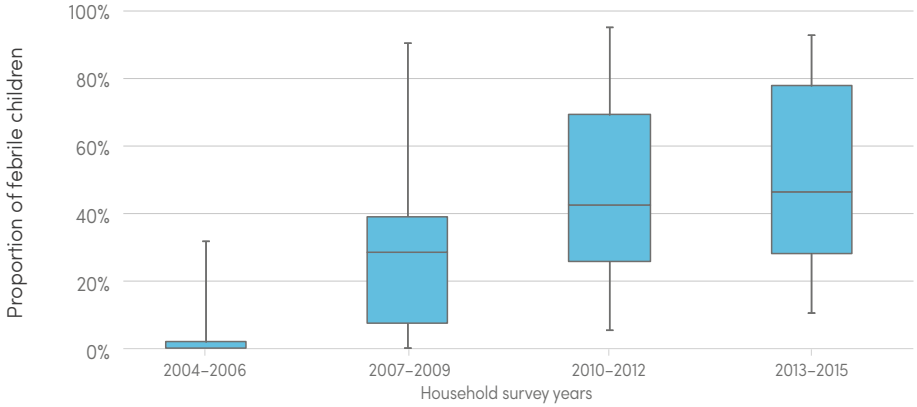


Source: *Malaria treatment model from the Center for Applied Malaria Research and Evaluation (Tulane University), the Global Health Group (University of California, San Francisco) and the Malaria Atlas Project (University of Oxford).*

less likely to obtain ACTs for treatment (**Figure 3.16**). Of those that seek care, a significant proportion of antimalarial treatments are not ACT medicines (**Figure 3.15**). Although MDG Indicator 6.8 is much less relevant after the change in the diagnostic testing recommendation by WHO, it is possible to estimate that the proportion of children aged under 5 years, with fever and who are treated with appropriate antimalarial drugs, rose from 0% in 2000 to 13% in 2014. This trend is, however, difficult to interpret; the indicator is not expected to reach 100% because not all fevers are due to malaria, and the proportion of fevers due to malaria in sub-Saharan Africa has decreased over time through improved malaria control (*23*).

The proportion of children treated with an ACT among all children treated for malaria is increasing. Nationally representative household surveys conducted between 2004 and 2015 indicate that an increasing proportion of febrile children who receive an antimalarial medicine are treated with an ACT (**Figure 3.14**). After ACT (median 47%, IQR: 29–77%), SP (median 5%, IQR: 1–18%), quinine (median 6%, IQR: 3–9%), chloroquine (median 2%, IQR: 0–10%)

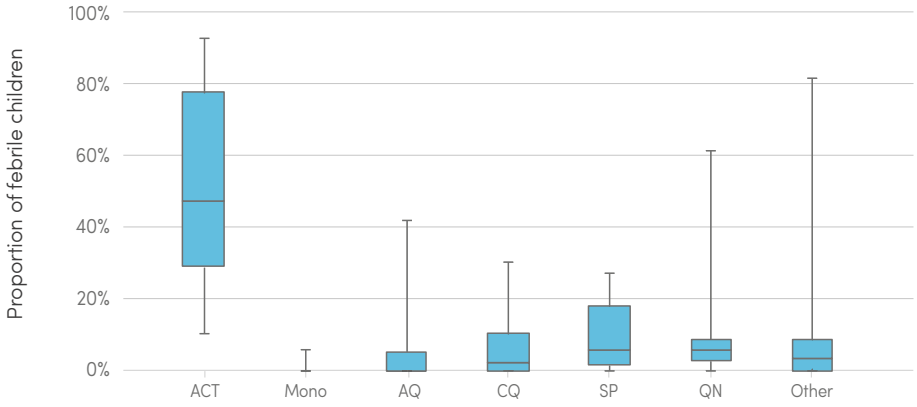
Figure 3.14 Proportion of febrile children who receive an ACT among those who receive any antimalarial, sub-Saharan Africa, 2004–2015



Only shows results for a subset of countries which have had household surveys in the stated years

Source: *Nationally-representative household survey data from demographic and health surveys and malaria indicator surveys*

Figure 3.15 Proportion of febrile children receiving antimalarial treatments, by type, sub-Saharan Africa, 2013-2015

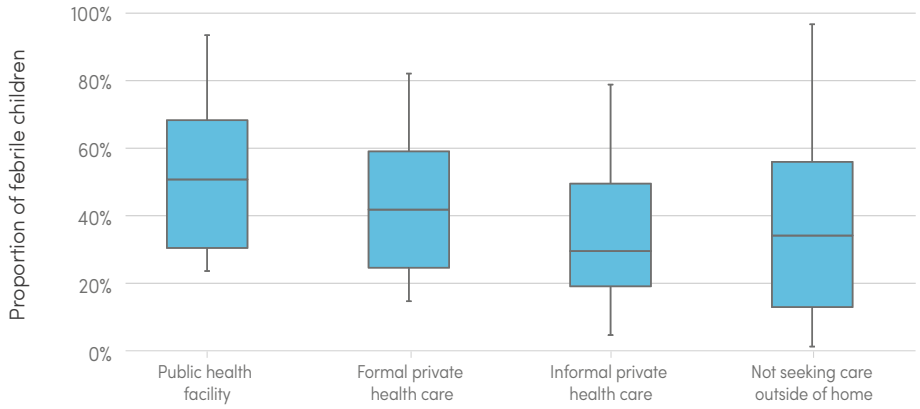


ACT, artemisinin-based combination therapy; AQ, amodiaquine; CQ, chloroquine; Mono, monotherapy; SP, sulfadoxine-pyrimethamine; QN, quinine

Only shows results for a subset of countries which have had household surveys in the stated years

Source: *Nationally-representative household survey data from demographic and health surveys and malaria indicator surveys*

Figure 3.16 Proportion of febrile children who receive an ACT among those who receive any antimalarial, by place where care was sought, sub-Saharan Africa, 2013–2015



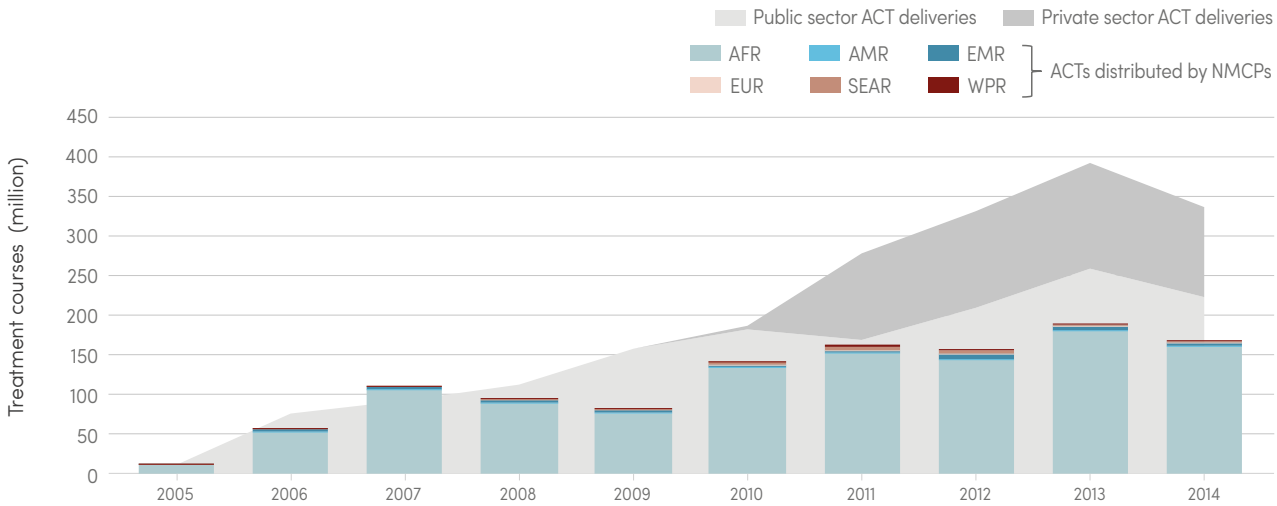
Only shows results for a subset of countries which have had household surveys in the stated years

Source: *Nationally-representative household survey data from demographic and health surveys and malaria indicator surveys*

and AQ (median 1%, IQR: 0–5%) were the next most commonly used medicines during 2013–2015 (**Figure 3.15**). The proportion of antimalarial treatments that were ACTs was lowest when care was sought from informal health-care providers, such as market stallholders or itinerant vendors (**Figure 3.16**).

The increasing proportion of malaria cases treated with ACT can be linked to the increasing numbers of ACT treatments delivered by manufacturers and distributed by NMCPs. The number of ACT treatment courses procured from manufacturers increased from 11 million in 2005 to 337 million in 2014 (**Figure 3.17**). The WHO African Region accounted for 98% of all manufacturer deliveries of ACT in 2014, with more than half of the total being doses for children. The number of ACT treatments delivered by manufacturers to the public sector in 2014 (223 million) was lower than the number delivered in 2013; likewise, NMCPs distributed 169 million treatments in 2014 through

Figure 3.17 Number of ACT treatment courses distributed by NMCPs, by WHO region, and ACT treatment courses delivered by manufacturers to the public and private* sector, 2005–2014



ACT, artemisinin-based combination therapy; AFR, African Region; AMR, Region of the Americas; EMR, Eastern Mediterranean Region; EUR, European Region; NMCP, national malaria control programme; RDT, rapid diagnostic test; SEAR, South-East Asia Region; WPR, Western Pacific Region

*2010-2013 includes AMFm public and private sectors, 2014 includes Global Fund co-payment mechanism, public and private sectors

Source: *NMCP reports and companies eligible for procurement by WHO/UNICEF*

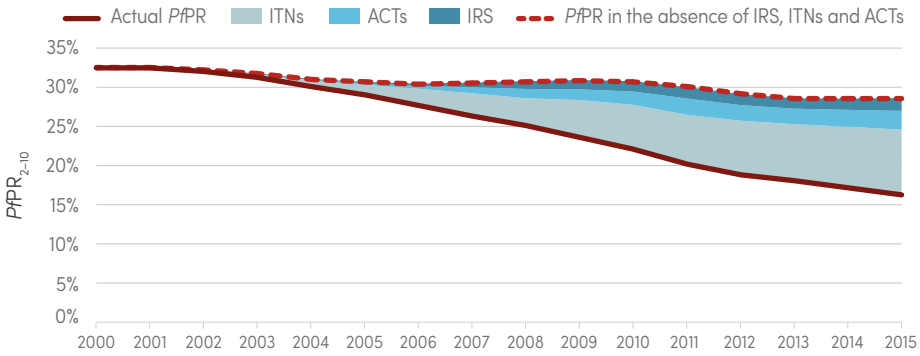
public sector facilities, approximately 20 million fewer than in 2013. The discrepancy between manufacturer deliveries to the public sector and the number distributed through public facilities can be accounted for, in part, by incomplete reporting by NMCPs. However, the relationship between manufacturer deliveries, NMCP distributions and the proportion of malaria cases receiving ACT is not completely understood.

3.7 Effect of malaria prevention and treatment measures on parasite prevalence and case incidence in sub-Saharan Africa

The model used to estimate the number of malaria cases in many sub-Saharan African countries can be used to examine the influence of malaria interventions on changes in parasite prevalence and malaria incidence. The model is based on parasite prevalence surveys undertaken between 2000 and 2015, and on prospective studies that provide estimates of the relationship between parasite prevalence and malaria case incidence (Annex 1). It also incorporates ITN use, IRS, access to ACT within each country, and a suite of environmental and sociodemographic covariates. During the process of modelling, the effect of each intervention on declining parasite prevalence was captured. By using the observed effect of each intervention, estimation of the parasite prevalence under hypothetical scenarios without interventions was possible. This *no intervention* scenario was then used to estimate the total effect of interventions on both parasite prevalence and incident malaria cases.

Based on the modelling of parasite prevalence and case incidence, it is estimated that malaria interventions contributed to 76% of the reduction in parasite prevalence in sub-Saharan Africa between 2000 and 2015, and 70% of the reduced number of cases. Parasite prevalence among children aged 2–10 years is estimated to have decreased from 33% in 2000 (UI: 31–35%) to 16% in 2015 (UI: 14–19%) (Figure 3.18). It is estimated that malaria control interventions accounted for 76% of this decline, although intervention coverage remains well below international targets for universal coverage. ITNs had the largest effect, accounting for an estimated 50% (UI: 46–53%) of the decline

Figure 3.18 Predicted time series of *Pf*PR$_{2–10}$ across endemic Africa with and without interventions, 2000–2015



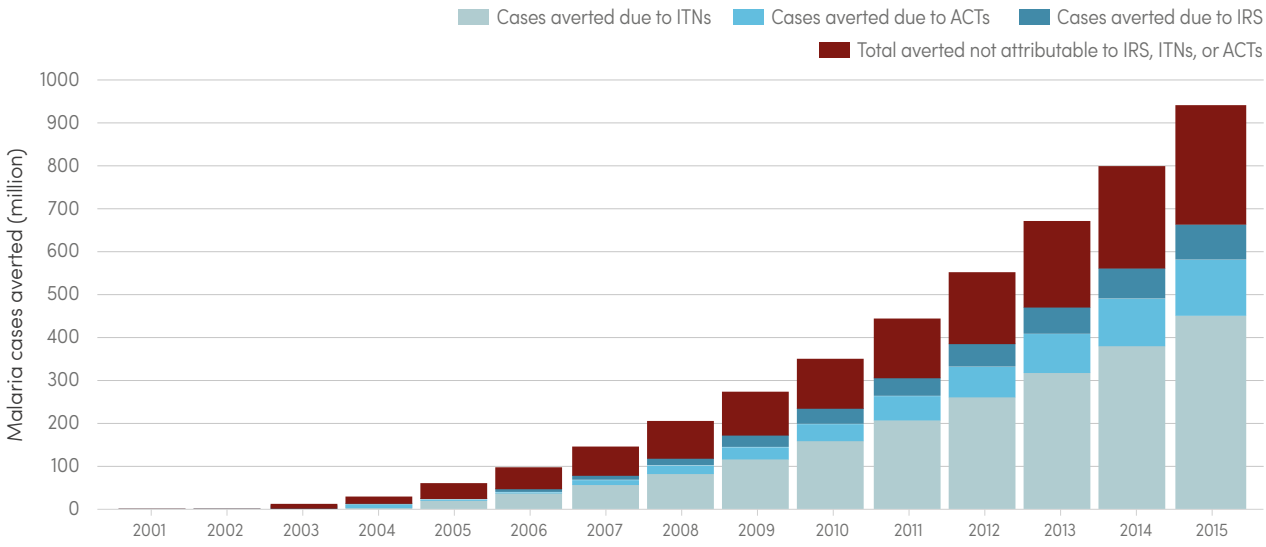
ACT, artemisinin-based combination therapy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net; *Pf*PR, *P. falciparum* parasite rate

The red line shows the actual prediction and the dotted red line a counterfactual prediction in a scenario without coverage by ITNs, ACT or IRS. The coloured regions indicate the relative contribution of each intervention in reducing *Pf*PR$_{2–10}$ throughout the period.

Source: *Malaria Atlas Project (18)*

in *Pf*PR since 2000. In general, ITNs have been present for longer and have been implemented at higher levels of coverage than have other interventions. ACT and IRS have also made important contributions to reducing parasite prevalence, contributing to 14% (11–18%) and 10% (8–12%) of the reductions, respectively. While the primary role of ACT is averting severe disease and death, prompt treatment can also reduce the incidence of uncomplicated cases. These proportional contributions do not necessarily reflect the comparative effectiveness of different interventions; rather, they mainly indicate how early and at what scale the different interventions were deployed. In total, it is estimated that malaria control interventions in sub-Saharan Africa averted 663 million malaria cases (range: 542–753 million) during 2001–2015, representing 70% of the 943 million more cases that would have occurred had incidence rates remained unchanged since 2000 (**Figure 3.19**). It is estimated that 69% (UI: 63–73%), 21% (17–29%) and 10% (6–14%) of the 663 million fewer cases attributable to interventions were due to ITNs, ACT and IRS, respectively.

Figure 3.19 Predicted cumulative number of malaria cases averted by interventions, sub-Saharan Africa, 2000–2015



ACT, artemisinin-based combination therapy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net

Source: *Malaria Atlas Project (18) estimates of cases averted attributable to ITNs, ACTs, and IRS and WHO estimates of total cases averted*

4. Costs of malaria control and cost savings

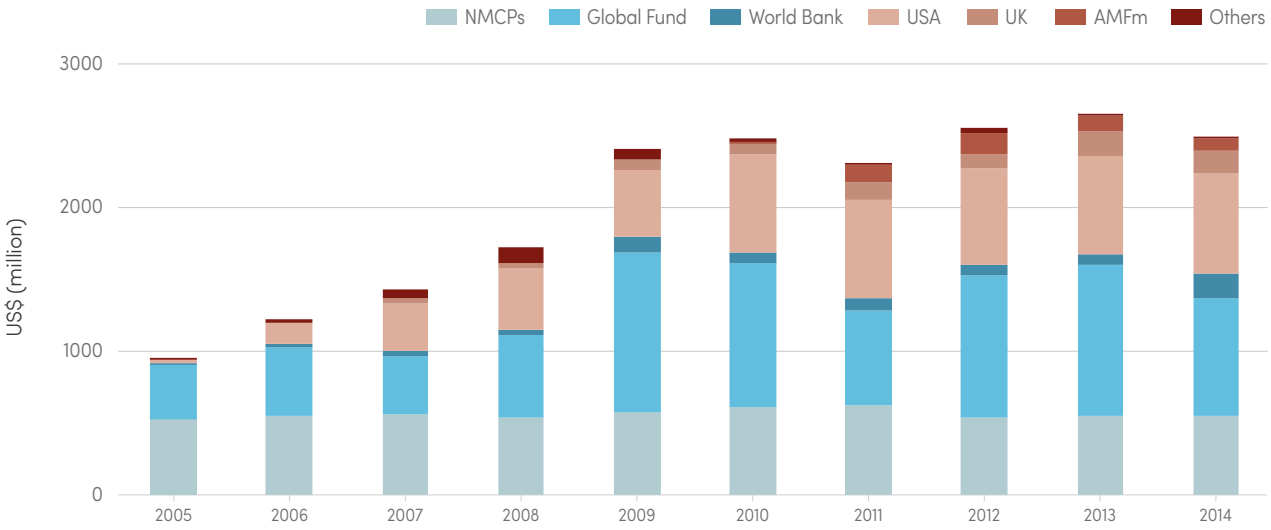
4.1 Investments in malaria control

Global financing for malaria control increased from an estimated US$ 960 million in 2005 to US$ 2.5 billion in 2014. Of the total invested in 2014, international investments accounted for 78% (US$ 1.9 billion) and governments of malaria endemic countries for 22% (US$ 550 million) (Figure 4.1).

International funding for malaria control decreased by 8% between 2013 and 2014. This was primarily due to changes in the funding arrangements of the Global Fund; notably, improved disbursement procedures that mitigate surpluses of cash held by countries, country challenges for absorbing funds, a transition to the Global Fund's New Funding Model, which generated delays in submission of funding requests; and changes in procurement arrangements, including commodity payment upon delivery (*24*).

Domestic funding from NMCPs was estimated to have increased by 1% between 2013 and 2014. Between 2013 and 2014, domestic contributions were estimated to have decreased in three WHO regions – the Region of the Americas (-5%), the South-East Asia Region (-7%), and the European Region (-8%) (Figure 4.2), while such contributions increased in the Western Pacific Region (+22%), the Eastern Mediterranean Region (+5%) and the

Figure 4.1 Investments in malaria control activities by funding source, 2005–2014



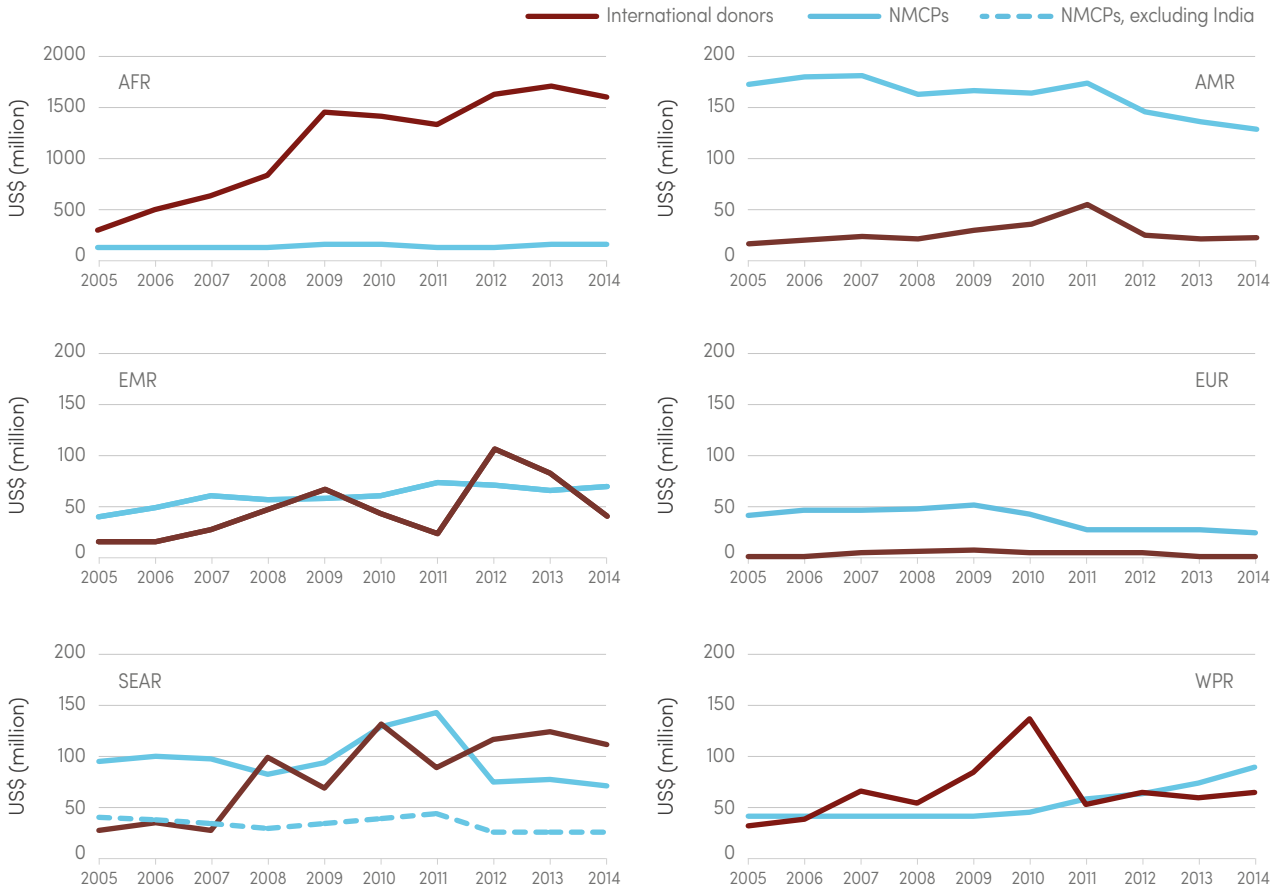
AMFm, Affordable Medicine Facility-malaria; Global Fund, Global Fund to Fight AIDS, Tuberculosis and Malaria; NMCP, national malaria control programme; UK, United Kingdom; USA, United States of America

Annual values have been converted to constant 2014 US$ using the gross domestic product (GDP) implicit price deflator from the USA in order to measure funding trends in real terms.

Source: *ForeignAssistance.gov, Global Fund, NMCPs, Organisation for Economic Co-operation and Development (OECD) creditor reporting system (CRS), the World Bank Data Bank*

African Region (+1%). Concurrently, international funding decreased in the Eastern Mediterranean Region (–50%), the European Region (-54%), the South-East Asia Region (-11%) and the African Region (-7%), mainly reflecting lower funding from the Global Fund compared to 2013. In contrast, in the Region of the Americas and the Western Pacific Region, international funding increased by 6% and 9%, respectively, compared to 2013. Domestic contributions represent the funding reported annually to WHO for the *World malaria report*. Reported domestic funding generally underestimates total domestic contributions to malaria control since it is generally restricted to direct expenditures on malaria control activities by NMCPs; sometimes, only money spent at central level is included, whereas regional and district level resources used in malaria control are excluded. In addition, the reported contributions often exclude resources used for malaria case management at public health facilities, such as the costs of diagnosis and drugs, as well as the costs of personnel and infrastructure needed to provide outpatient and inpatient services. In some instances, malaria programmes may be integrated with other disease control programmes, making it particularly difficult to track expenditures for malaria alone.

Figure 4.2 Investments in malaria control activities by WHO region and funding source, 2005–2014



AFR, African Region; AMFm, Affordable Medicine Facility-malaria; AMR, Region of the Americas; EMR, Eastern Mediterranean Region; EUR, European Region; Global Fund, Global Fund to Fight AIDS, Tuberculosis and Malaria; NMCP, national malaria control programme; SEAR, South-East Asia Region; UK, United Kingdom; USA, United States of America; WPR, Western Pacific Region
Annual values have been converted to constant 2014 US$ using the GDP implicit price deflator from the USA in order to measure funding trends in real terms.

Source: *ForeignAssistance.gov, Global Fund, NMCPs, OECD CRS, the World Bank Data Bank*

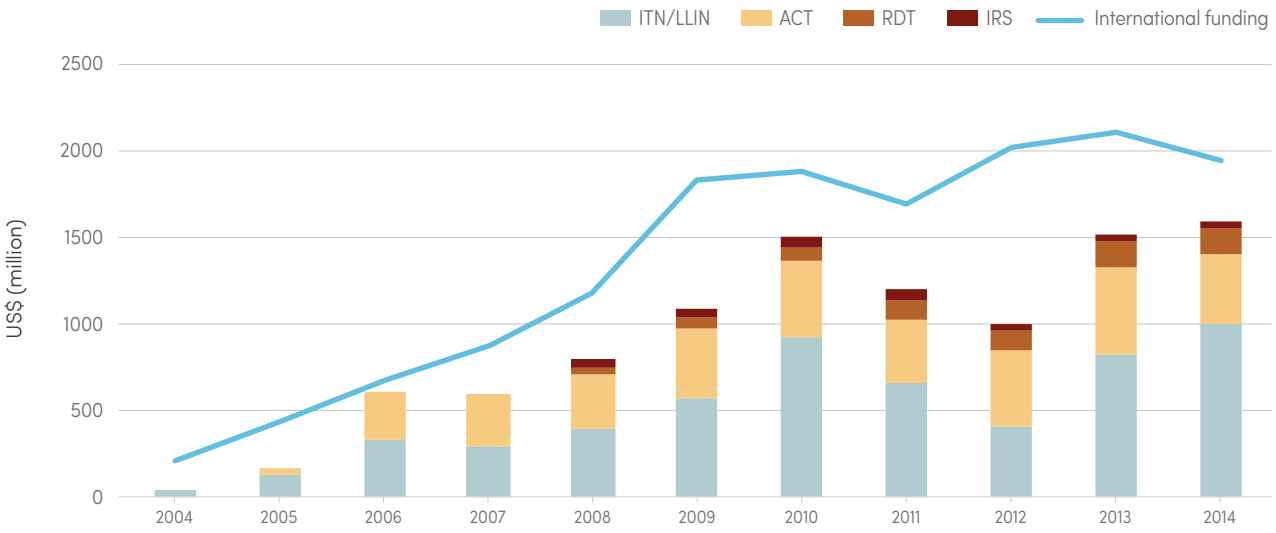
Most of the international funding in 2014 was spent in the WHO African Region. Of the US$ 1.9 billion disbursed by international sources, 82% was directed to the WHO African Region, 13% to other regions and 5% to malaria endemic areas for which no information on country or region was available. In 2014, international donors were the most important source of funding for malaria control activities in the WHO African Region, representing 91% of the total amount spent that year, with the balance coming from domestic funding. In other regions, domestic governments generally finance a higher share of malaria control expenditures, reflecting both the ability of those countries to fund their own programmes and their limited access to international funding for malaria.

Spending on commodities rose 40-fold between 2004 and 2014, and accounted for about 82% of recorded international malaria spending in 2014. Spending on commodities can be estimated by considering manufacturers' sales volumes data for ITNs/LLINs, ACTs and RDTs, and the number of people covered by IRS (as reported by NMCPs), and applying average procurement prices of those commodities (see Annex 1 for more details). Over the past 11 years, variations in commodity spending, notably for ITNs/LLINs, have closely followed variations in global international funding (with a lag of about a year), highlighting the influence of funding availability for operationalizing malaria control activities (Figure 4.3). Spending on malaria control commodities is estimated to have increased 40-fold over the past 11 years, from about US$ 40 million in 2004 to about US$ 1.6 billion in 2014. ITNs/LLINs, ACTs, RDTs and IRS represented 82% of the total amount spent by international sources on malaria control activities in 2014. The remainder probably includes in-country supply-chain costs such as personnel, training, transport and storage. Of the commodities, ITNs/LLINs were responsible for 63% of total spending (US$ 1 billion), followed by ACTs (25%, US$ 403 million), RDTs (9%, US$ 151 million) and IRS (3%, US$ 46 million).

4.2 Provider cost savings attributed to malaria control activities

Reductions in malaria case incidence attributable to malaria control activities are estimated to have saved about US$ 900 million on the malaria case management costs in sub-Saharan Africa between 2001 and 2014. Savings from averting malaria cases and their treatment (see Annex 1) can be estimated using estimates of the number of malaria cases that have been averted by malaria control activities since 2000 (see Section 3.7), data on treatment-seeking behaviour, parasitological diagnosis and treatment coverage, and data from the WHO-CHOICE database on the cost of an outpatient visit and an inpatient stay. Of the cases averted since 2000, it is estimated that 263 million cases would have sought care in the public sector, translating into US$ 900 million saved on malaria case management costs in sub-Saharan Africa between 2001 and 2014. Of the US$ 900 million saved, ITNs/LLINs contributed the largest savings of US$ 610 million (68%), followed by ACTs (156 million, 17%) and IRS (134 million, 15%). These estimates consider only savings to health services and exclude savings to households.

Figure 4.3 Expenditures on ITN/LLIN, ACT, RDT and IRS, and trend in international funding, 2004–2014

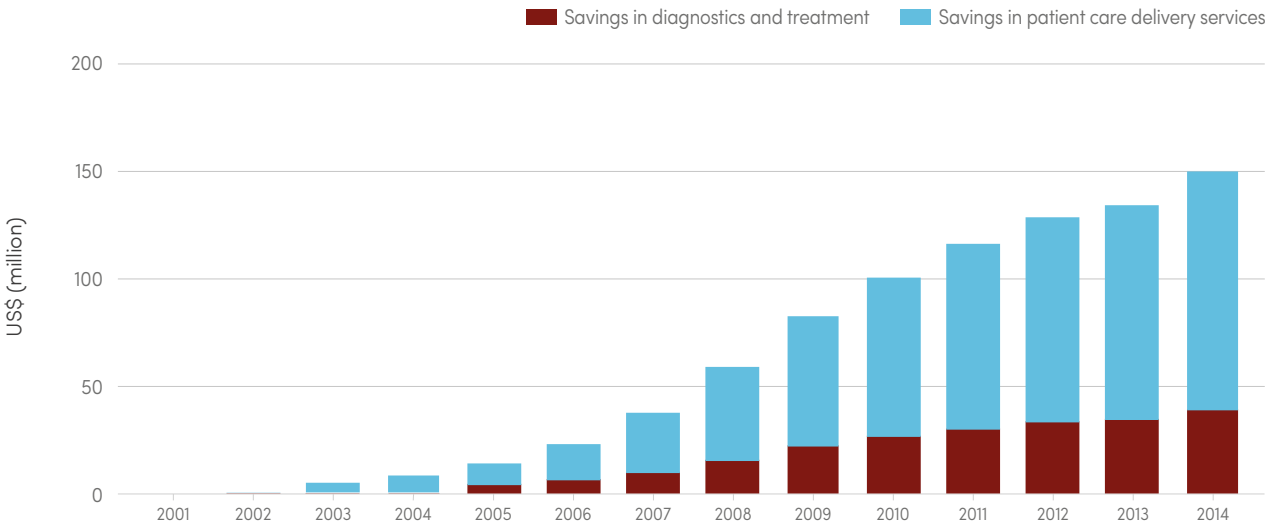


ACT, artemisinin-based combination therapy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net; LLIN, long-lasting insecticidal net; RDT, rapid diagnostic test

Annual values have been converted to constant 2014 US$ using the GDP implicit price deflator from the USA in order to measure funding/spending trends in real terms.

Source: *Sales volumes of RDTs and ACTs reported to WHO by manufacturers as per* ***Sections 3.5*** *and* ***3.6****; net mapping project for ITNs/LLINs; NMCP data for IRS as per* ***Section 3.2****; Management Science for Health International Price Indicator Guide, the United States President's Malaria Initiative and the Global Fund Price and Quality Reporting Tool for commodity procurement prices. Total international funding data sources as per Figure 4.1.*

Figure 4.4 Provider savings in malaria case management costs attributable to expansion of malaria control activities, 2001–2014



Annual values have been converted to constant 2014 US$ using the GDP implicit price deflator from the USA in order to measure savings trends in real terms.

Source: *Data on malaria cases averted as per* ***Section 2.3****. Data on treatment-seeking behaviour, parasitological diagnosis and treatment coverage as per* ***Sections 3.5*** *and* ***3.6****. WHO-CHOICE database on price estimates for outpatient care visit and inpatient bed stay; Management Science for Health International Drug Price Indicator Guide and Global Fund Price and Quality Reporting Tool for commodity prices.*

5. Challenges

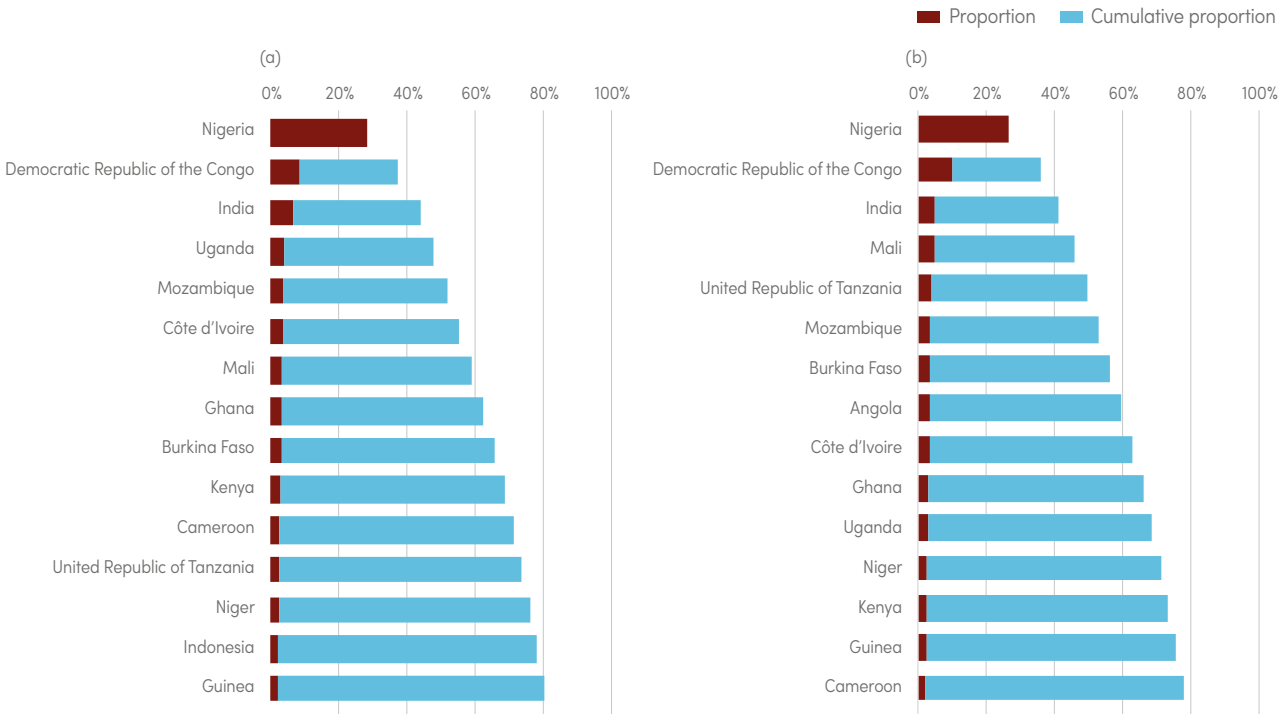
5.1 Continuing disease burden

Malaria remains a major public health problem in many countries of the world. Despite the progress in reducing malaria cases and deaths, it is estimated that 214 million cases of malaria occurred worldwide in 2015 (95% UI: 149–303 million), leading to 438 000 malaria deaths (95% UI: 263 000–635 000) (Section 2. 1).

More than 80% of estimated malaria cases and deaths occur in fewer than 20 countries. In 2015, it is estimated that 15 countries accounted for 80% of cases, and 15 countries accounted for 78% of deaths (**Figure 5.1**). The global burden of mortality is dominated by countries in sub-Saharan Africa, with the Democratic Republic of the Congo and Nigeria together accounting for more than 35% of the global total of estimated malaria deaths.

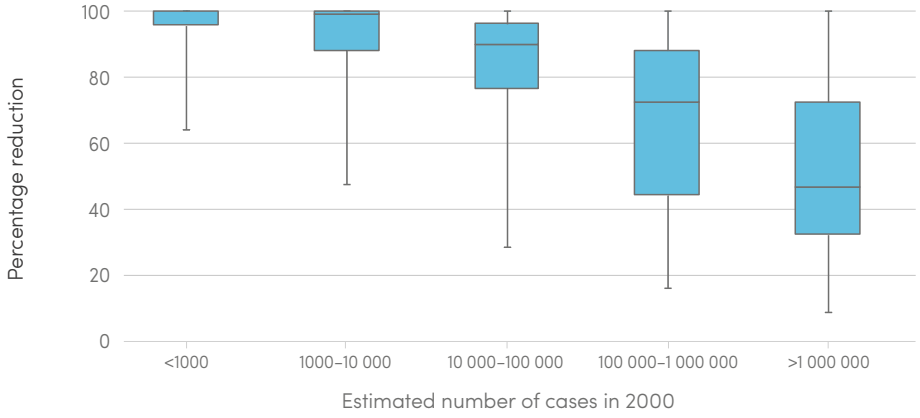
Rates of decline in malaria incidence and mortality are slower in high-burden countries. The decreases in case incidence and mortality rates have been most rapid in countries that had the smallest number of cases in 2000, and slowest in countries that had the largest initial malaria burden (**Figure 5.2**). The overall decrease in malaria incidence (32%) between 2000 and 2015 in the 15 countries that accounted for 80% of cases lags behind that in the other countries (53%). Reductions in incidence need to be greatly accelerated in these countries if global progress is to be improved.

Figure 5.1 Estimated proportion, and cumulative proportion, of the global number of (a) malaria cases and (b) malaria deaths in 2015 for countries accounting for the highest share of the malaria disease burden



Source: *WHO estimates*

Figure 5.2 Reduction in malaria incidence 2000–2015 versus estimated number of cases in a country in 2000

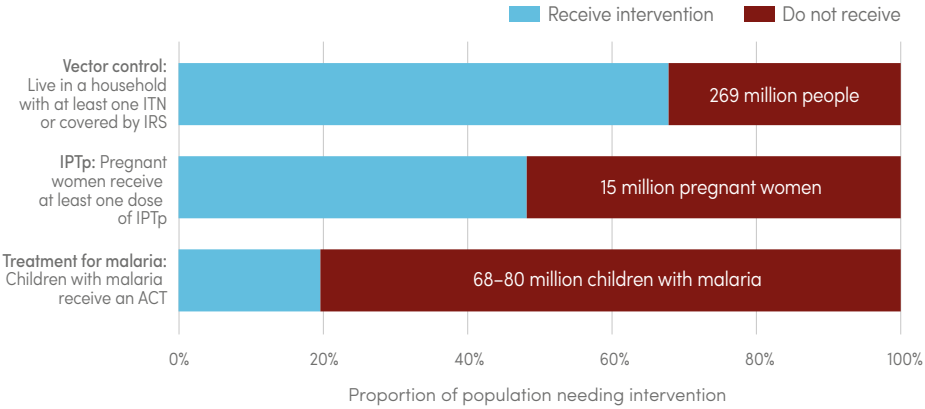


Two countries with increases (negative decreases) have been excluded from the chart.
Source: *WHO estimates*

5.2. Gaps in programme coverage

Despite impressive gains in malaria intervention coverage, millions of people still do not receive the services they need. Based on the results presented in Section 3 of this report, it can be estimated that, in sub-Saharan Africa in 2014, some 269 million of the 834 million people at risk of malaria lived in households without a single ITN or IRS; 15 million of the 28 million pregnant women at risk did not receive a single dose of IPTp; and between 68 and 80 million of the 92 million children with malaria did not receive ACT (**Figure 5.3**). To identify how these gaps can be filled, it is useful to understand where the bottlenecks in service delivery occur (*25*). The types of gaps and the problems to be addressed vary, depending on the intervention. The analysis presented below represents a continental picture. The bottlenecks and factors responsible may vary among countries, and subnationally; hence, it is important to understand which gaps need to be addressed in different settings.

Figure 5.3 Proportion and number of people not receiving an intervention, sub-Saharan Africa, 2014

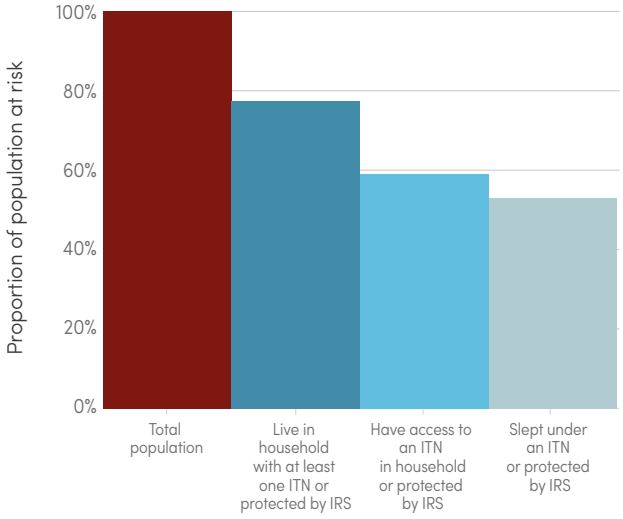


ACT, artemisinin-based combination therapy; IPTp, intermittent preventive treatment in pregnancy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net
Source: *Insecticide-treated mosquito net coverage model from the Malaria Atlas Project, with further analysis by WHO; WHO estimates of IPTp coverage using NMCP reports and United Nations population estimates; malaria treatment model from the Malaria Atlas Project (University of Oxford), Center for Applied Malaria Research and Evaluation (Tulane University), Global Health Group (University of California, San Francisco)*

Lack of access to an ITN or IRS remains the principal barrier to protection from mosquito bites. Only 53% of the 834 million people at risk of malaria in sub-Saharan Africa in 2014 sleep under an ITN or live in a household that has received IRS (**Figure 5.4**). A principal reason why 44% of the population is not protected from mosquito bites is that just 63% of the population at risk has access to an ITN within the household (or IRS). Of the 37% without access to an ITN or IRS, 18% live in households that had no ITNs; the remainder live in households with an insufficient number of ITNs for all occupants. While the use of available ITNs may need to be addressed in some settings (to address the gap between access to an ITN and sleeping under it), the principal bottleneck in ensuring that all people at risk of malaria are protected from mosquito bites is access to interventions. In 2014, 189 million ITNs were delivered to sub-Saharan countries, more than in any previous year, and 154 million were delivered in the first three quarters of 2015. Continued efforts are needed to extend the availability of both ITN and IRS programmes, to ensure universal access to vector control and its benefits.

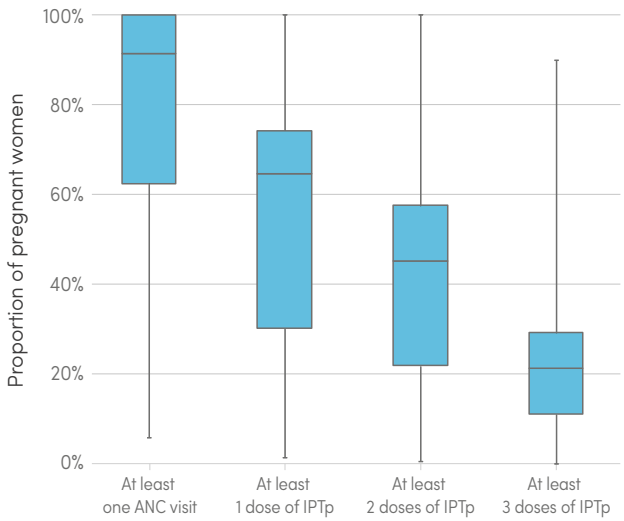
Missed opportunities to deliver IPTp during ANC visits continue to be a problem. Data reported by NMCPs, in agreement with nationally representative household surveys, indicate that a high proportion of pregnant women in sub-Saharan Africa attend antenatal care (median: 91%; IQR: 62–100%) (**Figure 5.5**). However, much lower proportions go on to receive the first dose of IPTp (median: 64%; IQR: 30–74%), the second dose (median: 45%; IQR: 22–57%) and the third dose (median: 21%; IQR: 11–29%). The difference between the proportion of women attending ANC clinics and the proportion receiving the first and subsequent doses of IPTp suggests a number of missed opportunities to deliver IPTp at these clinics.

Figure 5.4 Population at risk of malaria in sub-Saharan Africa with access to or using vector control, 2014



Source: *National malaria control programme reports, insecticide-treated mosquito net coverage model from Malaria Atlas Project, with further analysis by WHO*

Figure 5.5 Proportion of pregnant women attending ANC and proportion receiving IPTp, by dose, in sub-Saharan Africa, 2014

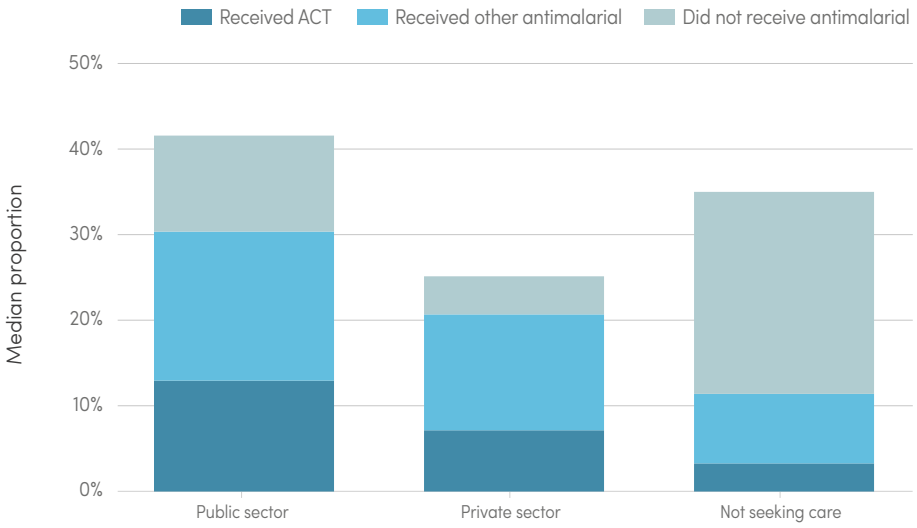


ANC, antenatal care; IPTp, intermittent preventive treatment in pregnancy

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

Multiple gaps exist in providing universal access to diagnostic testing and treatment. In sub-Saharan Africa, the low proportion of children with malaria who do not receive a diagnostic test or ACT is due to several factors. First, a large proportion of febrile children are not brought for care (median 35%: IQR 24–41% among 18 household surveys conducted in sub-Saharan Africa 2013–2015) (**Figure 5.6**). This may be because of poor access to health-care providers or because of a lack of awareness among caregivers regarding necessary care for febrile children. Second, a significant proportion of febrile children seek care in the informal private sector (e.g. pharmacies and shops). In these facilities, rates of malaria diagnostic testing are low and ACT treatments are less likely to be available, or carers are less able to afford them. Even if children are taken to a formal health-care provider (e.g. a health facility or a community health worker), they may not receive a diagnostic test or appropriate antimalarial treatment – the provider may have inadequate stocks or the patient may be unable to afford any charges for medicines. Efforts are needed to close these gaps in access by (i) further encouraging caregivers to bring febrile children to care, (ii) ensuring that well trained and well equipped health-care providers are available, and (iii) ensuring that children receive appropriate treatment when care is sought. This can be accomplished by expanding the number of public health-care providers, improving the quality of care in the public and private sector, and expanding malaria diagnosis and treatment at the community level.

Figure 5.6 Proportion of febrile children aged under 5 years receiving antimalarial medicines, by place of where care was sought, among sub-Saharan countries with household surveys, 2013–2015



ACT, artemisinin-based combination therapy

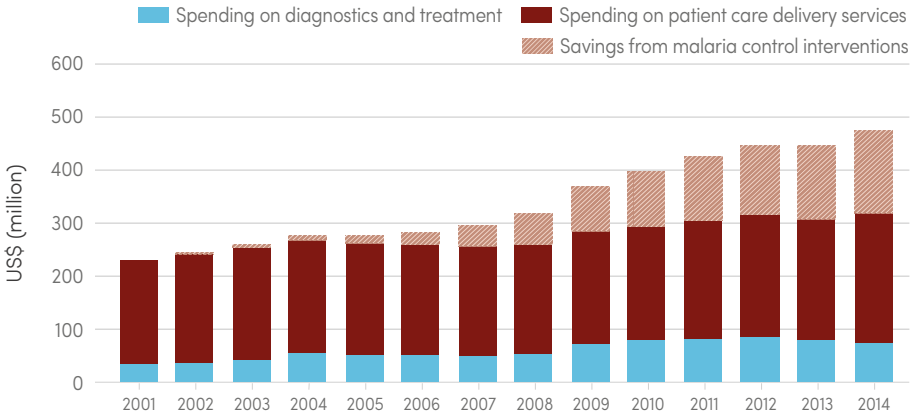
Source: *Nationally-representative household survey data from demographic and health surveys and malaria indicator surveys*

5.3 Weaknesses in health systems

The ability to fill gaps in intervention coverage is constrained by weaknesses in health systems in countries with the greatest malaria burden. Malaria predominates in countries with weaker health systems, as demonstrated, for example, by the negative relationship between the estimated number of malaria cases and the number of nurses per capita (Figure 5.7). Accordingly, the proportion of malaria patients that seek care at public sector health facilities is lower in countries with a higher estimated number of malaria cases (Figure 5.8a). In contrast, the proportion of patients with suspected malaria who seek care in the private sector increases with the estimated number of cases in a country (Figure 5.8b). The ability of malaria endemic countries to strengthen health systems depends on many factors, including a country's physical infrastructure, educational systems, policies surrounding the role of the public sector, and the ability to finance expansion of the sector. Countries with high numbers of malaria cases usually have low gross national incomes (Figure 5.9) and low domestic spending per capita on health and malaria control (Figure 5.10a). International spending on malaria control is more evenly distributed in relation to malaria burden, but a large proportion of this funding is spent on commodities (**Section 4.1**) and does not address fundamental weaknesses in health systems. Hence, innovative ways of providing services may be required to rapidly expand access to malaria interventions, particularly diagnostic testing and treatment. Such innovations will require community-based approaches and engagement with private sector providers.

Malaria continues to pose a serious economic burden on health systems. Since 2001 in sub-Saharan Africa, malaria is estimated to have cost every year, on average, nearly US$ 300 million for case management alone (Figure. 5.11). Malaria case incidence has decreased in sub-Saharan Africa since 2001, leading to lower costs than would otherwise have occurred (Section 4.2). However, the increasing coverage in diagnostic testing and ACT has required additional resources to allow countries to adequately manage cases. In 2014, of the US$ 330 million spent on case management, about 77% was spent on resources used for patient care service delivery and 23% on commodities for diagnosis and treatment. Given that malaria is concentrated in countries with comparatively low national incomes, the cost of malaria treatment is disproportionately borne by the most resource-constrained countries, with most spending for patient care generally supported by governments of malaria endemic countries.

Figure 5.11 Estimated spending on malaria treatment, sub-Saharan Africa, 2001–2014



Annual values have been converted to constant 2014 US$ using the GDP implicit price deflator from the USA in order to measure spending/savings trends in real terms.

Source: *Data on malaria cases as per* ***section 2.1*** *and on malaria cases averted as per* ***Section 2.3****. Data on treatment-seeking behaviour, parasitological diagnosis and treatment coverage as per* ***Sections 3.5*** *and* ***3.6****. WHO-CHOICE database on price estimates for outpatient care visit and inpatient bed stay; Management Science for Health International Drug Price Indicator Guide and Global Fund Price and Quality Reporting Tool for commodity prices.*

Figure 5.7 Number of nurses per 1000 population in malaria endemic countries versus estimated number of malaria deaths*

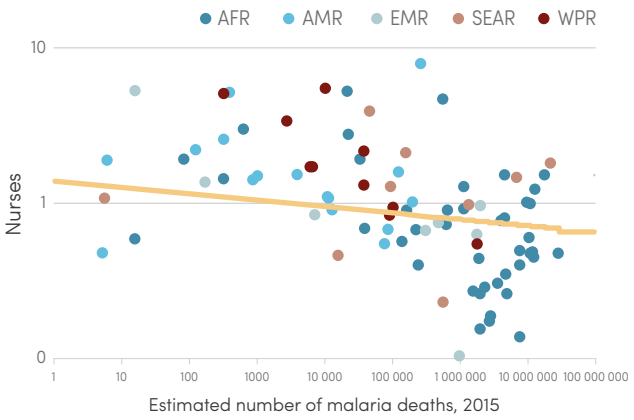
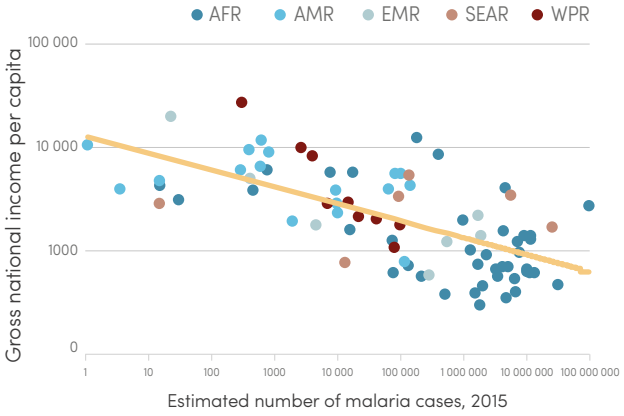


Figure 5.9 Gross national income per capita versus estimated number of malaria cases, by WHO region, 2015

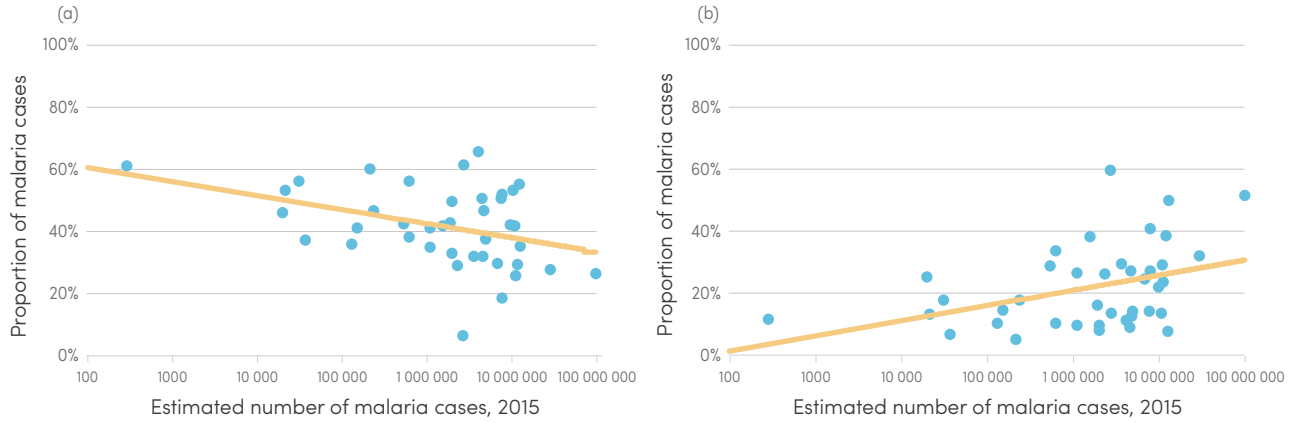


* Year of observation varies by country, ranging between 2005 and 2012

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

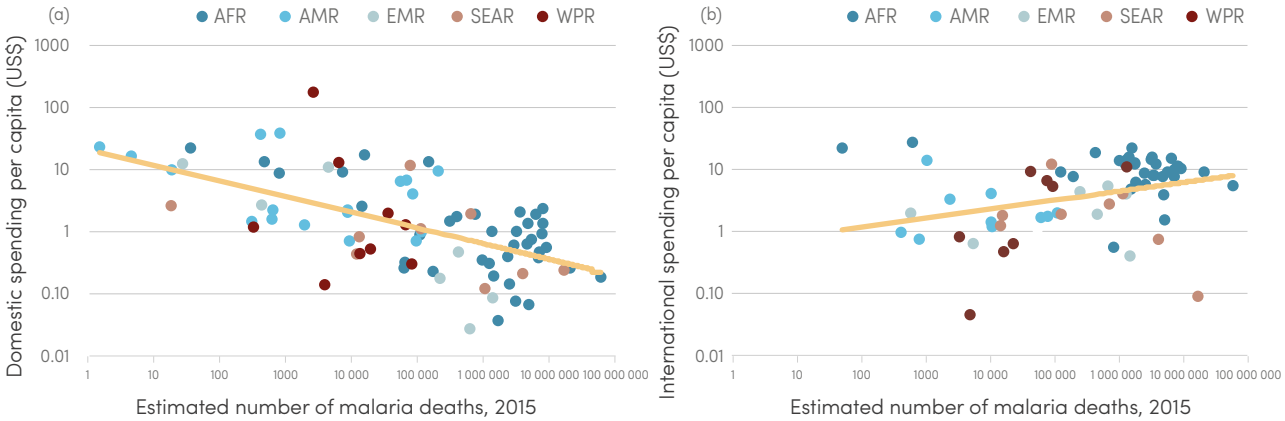
Source: *WHO estimates and the World Bank Data Bank*

Figure 5.8 Proportion of malaria cases seeking care (a) in public sector and (b) private sector versus estimated number of malaria cases, sub-Saharan Africa, 2015



Source: *WHO estimates and nationally-representative household survey data from demographic and health surveys and malaria indicator surveys*

Figure 5.10 (a) Domestic government spending on malaria control per capita and (b) international government spending on malaria control per capita versus estimated number of malaria deaths, by WHO region, 2015



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

Source: *WHO estimates and the World Bank Data Bank*

Source: *ForeignAssistance.gov, Global Fund and OECD creditor reporting system*

5.4 *Plasmodium vivax* malaria

***P. vivax* malaria is a significant public health issue in many parts of the world.** *P. vivax* is estimated to have been responsible for 13.8 million malaria cases globally in 2015, and accounted for approximately half the total number of malaria cases outside Africa (Table 5.1, Figure 5.12). Most cases of *P. vivax* malaria occur in the WHO South-East Asian Region (74%), followed by the WHO Eastern Mediterranean Region (11%) and the WHO African Region (10%) (Figure 5.13). More than 80% of *P. vivax* malaria cases are estimated to occur in three countries (Ethiopia, India and Pakistan).

Control of *P. vivax* faces special challenges. In many areas where *P. vivax* malaria is common, mosquitoes bite early in the evening, obtain blood meals outdoors and rest outdoors. Therefore, ITNs and IRS may be less effective in reducing the transmission of *P. vivax* parasites. Blood-stage infections of *P. vivax* often occur with low parasite densities, and can be missed using routine microscopy or RDTs. Moreover, the dormant hypnozoite stage in liver cells, which can cause multiple relapses, is undetectable with current diagnostic methods. In some areas, relapses may account for a large proportion of incident *P. vivax* cases. Only one option, primaquine, is available to treat the liver stage responsible for relapses. Primaquine requires a 14-day treatment course to which patients may not fully adhere. Primaquine is also contraindicated in patients with severe forms of glucose-6-phosphate dehydrogenase (G6PD) deficiency, and cannot be given to pregnant women or children aged under 6 months. In addition, currently available G6PD tests are generally not suitable for use in peripheral health facilities, where most patients first seek treatment.

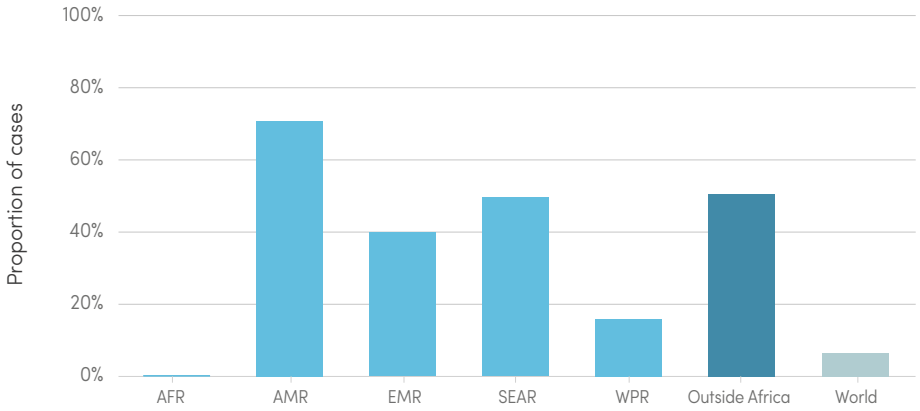
***P. vivax* predominates in countries that are prime candidates for malaria elimination.** Because of the difficulty in controlling *P. vivax*, its incidence has decreased more slowly than that of *P. falciparum* where the two species coexist. *P. vivax* may then persist as the principal cause of malaria and pose the main challenge to malaria elimination. Indeed, it predominates in countries with the lowest incidence of malaria, accounting for more than 70% of cases in countries with fewer than 5000 reported cases each year (Figure 5.14).

Table 5.1 Estimated number of malaria cases and deaths due to *P. vivax*, by WHO region, 2015

	Estimated *P. vivax* cases			% of total cases	Estimated *P. vivax* deaths			% of total deaths
WHO region	**Estimate**	**Lower**	**Upper**		**Estimate**	**Lower**	**Upper**	
African	1 400	300	3 000	1%	500	50	1 900	0%
Americas	500	400	600	71%	140	50	500	25%
Eastern Mediterranean	1 500	1 200	2 100	40%	450	110	1 800	6%
European	0	0	0		0	0	0	
South-East Asia	10 000	7 000	15 000	50%	3 500	1 200	10 300	11%
Western Pacific	200	100	400	16%	80	20	240	3%
World	**13 800**	**10 300**	**18 400**	**6%**	**4 700**	**1 400**	**14 900**	**1%**
Outside sub-Saharan Africa	12 300	9 000	16 800	51%	4 100	1 400	12 900	11%

Source: *WHO estimates*

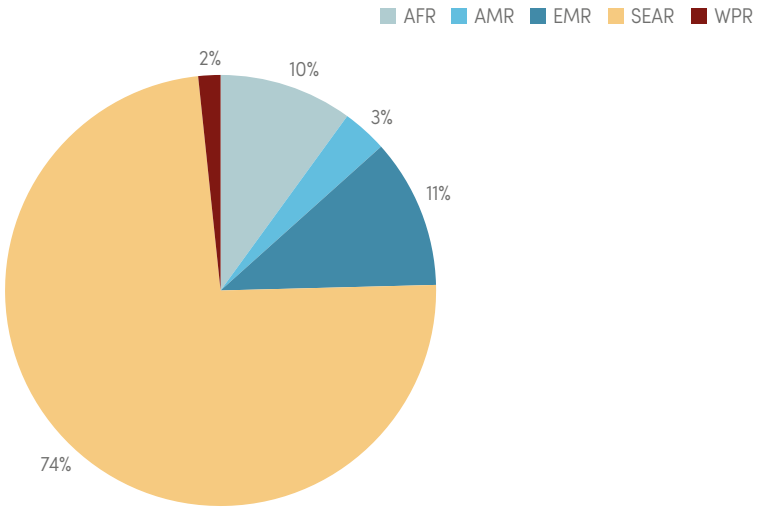
Figure 5.12 Proportion of estimated malaria cases in each region due to *P. vivax*, 2015



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

Source: *National malaria control programme reports and WHO estimates*

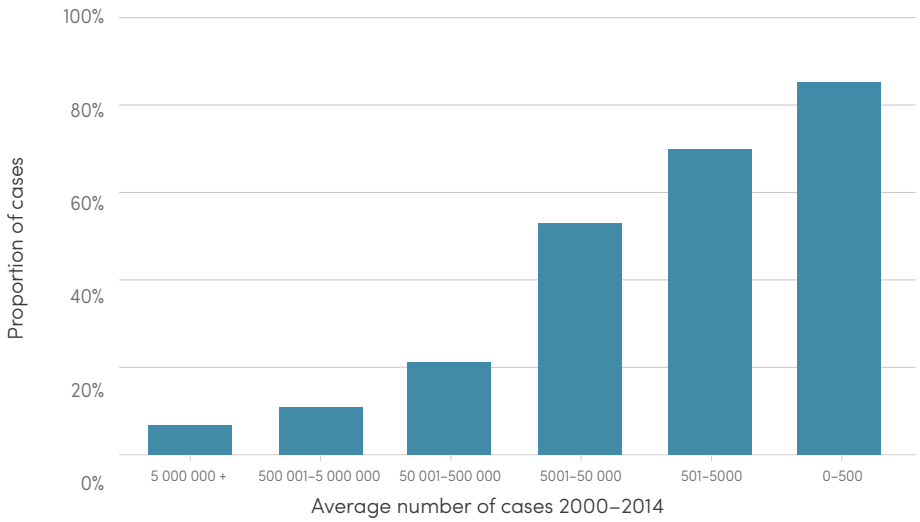
Figure 5.13 Proportion of global *P. vivax* cases occurring in each WHO region



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

Source: *National malaria control programme reports and WHO estimates*

Figure 5.14 Proportion of reported malaria cases due to *P. vivax*, countries with different average caseloads between 2000 and 2014



Source: *National malaria control programme reports and WHO estimates*

Severe cases and deaths due to *P. vivax* malaria have been reported from all endemic regions. The population-attributable risks of severe disease or death from *P. vivax* malaria have rarely been estimated. Data from a prospective, population-based study in Indonesia; routine case and death reporting in Brazil, Colombia and Venezuela; and data on *P. vivax* morbidity and mortality in travellers from non-endemic countries reveal case fatality rates (CFRs) ranging from 0% to 0.089% (weighted average: 0.059%), with a fourfold difference between Colombia (0.012%) and Indonesia (0.063%). If CFRs lie between the values for Colombia and Indonesia, then, based on the 13.8 million estimated *P. vivax* cases in 2015, the total number of malaria deaths that could be attributed to *P. vivax* in 2015 is between 1400 and 14 900 globally. Similarly, the number of deaths from *P. vivax* malaria outside sub-Saharan Africa in 2013 is estimated at between 1400 and 12 900 (i.e. between 4% and 39% of the total number of deaths outside sub-Saharan Africa). A clearer picture of severe *P. vivax* malaria is emerging, but further research is required to refine existing knowledge of the spectrum of syndromes and their risks of severe morbidity and mortality.

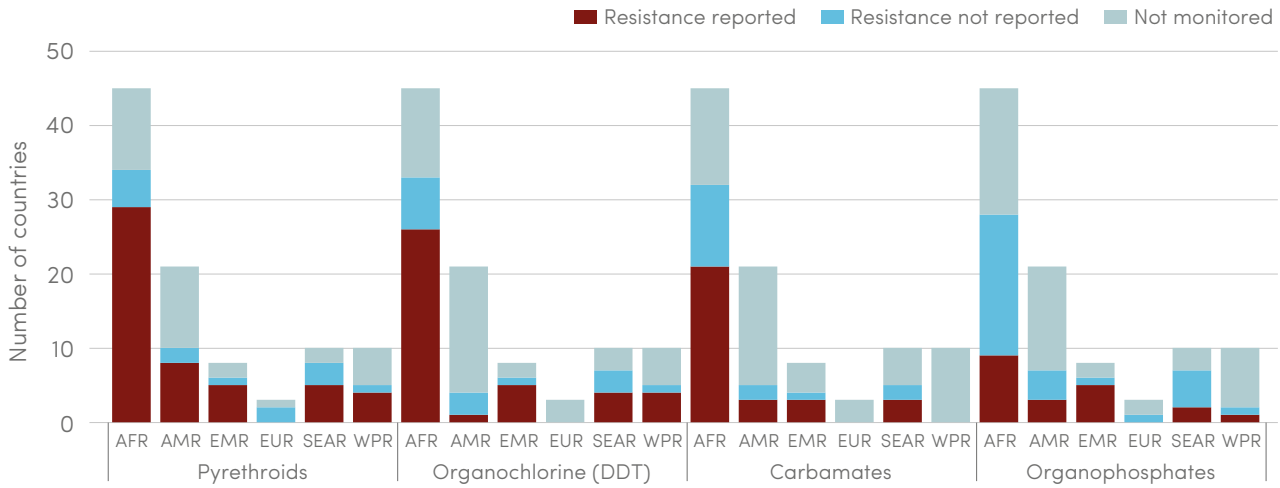
5.5 Resistance to insecticides

The effectiveness of insecticide-based vector control is threatened as malaria mosquitoes develop resistance to the insecticides used in ITNs and IRS. Current efforts in global malaria control rely heavily on a single insecticide class: pyrethroids. This is the only class of insecticides used in LLINs. Pyrethroids are also applied in many IRS programmes (although three other insecticide classes are used too). Insecticide resistance has therefore developed, and has increased in distribution and intensity. However, to date, there has been no reported failure with the use of LLINs. Mosquito and human habits, such as outdoor biting during late-night human activity, can also reduce the exposure of vectors to treated nets and sprayed walls. Because ITNs and IRS play such a key role in malaria control programmes, these biological threats can potentially compromise the significant gains achieved through malaria vector control, and thus limit further success.

Despite the huge investments in ITNs and IRS, many countries do not conduct routine malaria vector surveillance, including for insecticide resistance. Among the 97 countries that reported adopting policies for vector control with ITNs or IRS, only 52 reported resistance data for 2014. Of these, 32 had reported data for the preceding 2 years. Few countries consistently test all major vector species from all eco-epidemiological zones using each of the four main insecticide classes, even if the class has been used for vector control (Figure 5.15). With few exceptions, vector bionomics, including ecology and behaviour, are not routinely assessed. Only one third of reporting countries had a national vector database, and those available vary in completeness and quality. In 2014, WHO established a system for streamlining data collation to strengthen national databases and track insecticide resistance regionally and globally. Ongoing challenges at the national level include insufficient entomological capacity (both human and infrastructural) to conduct entomological surveillance, incomplete reporting and limited data sharing, and inadequate information on vector species and resistance mechanisms. Entomological data concerning each major species is critical to track changes over time and among and within areas to guide locally appropriate vector control.

Insecticide resistance, especially to pyrethroids, is widespread in malaria vectors. Of the 78 countries reporting any monitoring data since 2010, 60 reported resistance to at least one insecticide in one malaria vector from one collection site, and 49 countries reported resistance to insecticides from two or more insecticide classes. Pyrethroid resistance was the most commonly reported; in 2014, three quarters of the countries monitoring this insecticide class reported resistance (Figure 5.16).

Figure 5.15 Insecticide resistance and monitoring status, by insecticide class and WHO region, 2010–2014



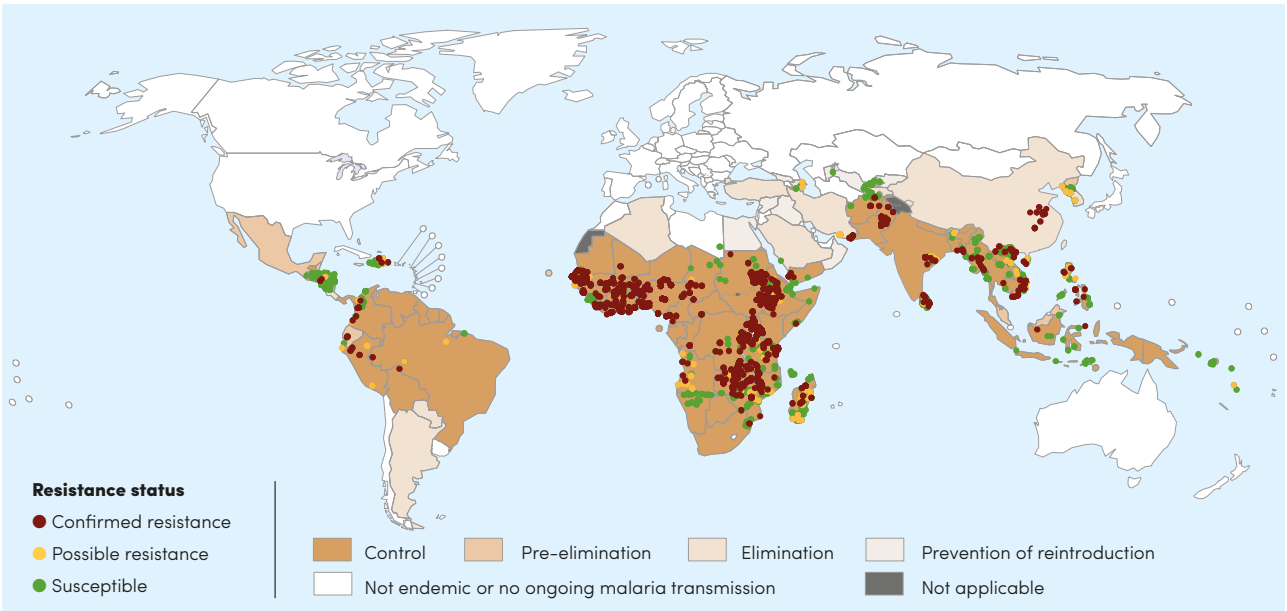
Reported use of class for malaria vector control, 2014

	Pyrethroids						Organochlorine (DDT)						Carbamates						Organophosphates					
	AFR	AMR	EMR	EUR	SEAR	WPR	AFR	AMR	EMR	EUR	SEAR	WPR	AFR	AMR	EMR	EUR	SEAR	WPR	AFR	AMR	EMR	EUR	SEAR	WPR
ITNs	42	19	8	3	10	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
IRS	11	9	4	3	7	6	6	0	0	0	1	0	8	3	4	0	1	0	4	2	0	0	1	0

AFR, African Region; AMR, Region of the Americas; DDT, dichloro-diphenyl-trichloroethane; EMR, Eastern Mediterranean Region; EUR, European Region; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net; SEAR, South-East Asia Region; WPR, Western Pacific Region

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

Figure 5.16 Reported pyrethroid resistance status of malaria vectors, measured with insecticide bioassays since 2010



Data shown are for standard bioassays. Where multiple insecticide classes or types, mosquito species or time points were tested, the highest resistance status is shown.

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

New tools to address mosquito resistance to insecticides are mostly in the early stages of development and evaluation. Tools include two LLINs and one IRS formulation with new classes of insecticides. In certain settings, pyrethroid LLINs that include a synergist to potentially improve efficacy against resistant vectors are available. However, the operational conditions for deployment of these new tools have not been established. Monitoring of LLIN durability and residual transmission will further inform tool development and deployment. Mobilizing resources is the key to adopting alternative tools for malaria vector control.

5.6 Antimalarial drug efficacy and resistance

Antimalarial drug resistance has substantial implications for malaria control and global public health. Historically, the emergence of chloroquine resistance in the 1970s and 1980s in Africa was associated with increased hospital admissions and mortality at the community level. Antimalarial drug resistance has also been associated with increased risk of anaemia and low birth weight, and with malaria epidemics and increased transmission (*26*). While the economic costs are difficult to quantify, the development and spread of resistance to antimalarial medicines has significantly increased the global cost of controlling malaria over time, given that new drugs must be continually developed to replace medicines that have become ineffective. In addition, patients for whom treatment has failed require repeated consultations at health facilities for further diagnosis and treatment, resulting in lost work days, absences from school, and increased costs to the health system. WHO maintains a global antimalarial drug efficacy database; data from therapeutic efficacy studies, conducted by NMCPs and other researchers, forms the basis of the following discussion (see **Annex 1** for further details).

***P. falciparum* resistance to artemisinins has now been detected in five countries in the Greater Mekong subregion (GMS):** Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam (*27*). Despite the observed changes in parasite sensitivity, which manifest in the form of delayed parasite clearance, patients continue to respond to combination treatment, provided the partner drug remains effective. However, slow parasite clearance in patients treated with ACT causes more parasites to be exposed to the partner medicine alone, increasing the risk of developing resistance to the partner medicine. If resistance develops to the partner drug, treatment failures with ACT are likely to increase, as has already been observed in some areas. In addition, failure to rapidly clear parasites could compromise the use of artemisinin for the treatment of severe malaria.

The efficacy of artesunate-amodiaquine (ASAQ) in Africa remains high. Studies conducted in the past 5 years showed treatment failure rates of less than 10% in all 25 countries in which the policy is ASAQ as the first- or second-line treatment. The treatment efficacy of ASAQ should continue to be monitored in these countries.

Artesunate-mefloquine (ASMQ) requires vigilant monitoring in South-East Asia and South America. ASMQ is the currently recommended first- or second-line treatment in five countries in South America (Bolivia, Brazil, Nicaragua, Peru and Venezuela) and four countries in South-East Asia (Cambodia, Malaysia, Myanmar and Thailand). In South America, the median treatment failure rates remain at 0%. High treatment failure rates with ASMQ in Cambodia and Thailand led both countries to change their treatment policy to dihydroartemisinin-piperaquine in 2010 and 2015, respectively. More recently, in Cambodia, a reversal in MQ resistance was detected through therapeutic efficacy studies and molecular marker surveillance. This finding led to the decision to reinstate ASMQ as the first-line treatment in some areas. All countries and areas in which treatment with ASMQ is the national policy are encouraged to continue to monitor its efficacy, including the trend of *pfmdr1* copy number (the marker of mefloquine resistance), and to review their malaria treatment policies accordingly.

The efficacy of artesunate-SP (ASSP) is compromised in areas with resistance to SP. Currently, nine countries in the Middle East, eastern Africa and India have recommended ASSP as their first-line treatment (Afghanistan, Djibouti, India, Islamic Republic of Iran, Pakistan, Saudi Arabia, Somalia, Sudan and Yemen). In all seven of the countries for which data were available,

the median treatment failure rate was less than 2%. However, studies have found elevated treatment failure rates in certain areas; for example, in Somalia, a failure rate of 22.2% was observed during a therapeutic efficacy study conducted in 2011. Similarly, the treatment failure rates in Sudan have increased from 5.3% in 2005 to 9.4% in 2011. In north-east India near the Myanmar border, treatment failure rates between 19% and 25.9% were observed in three studies conducted in 2012, leading to a change in treatment policy in this region to artemether-lumefantrine (AL). Molecular studies of *Pfdhfr* and *Pfdhps* in Somalia indicate that treatment failures are related to resistance to SP, in the absence of artemisinin resistance. It is well known that resistance to antifolates emerges rapidly, and reductions in resistance are rare. In India, Somalia and Sudan, treatment failures are associated with *Pfdhfr* and *Pfdhps* quadruple and quintuple mutants. These mutations are still rare in Afghanistan and Pakistan.

The efficacy of artemether-lumefantrine (AL) in Africa and South America remains high. Currently, 40 countries in Africa and six countries in South America are using AL as their first- or second-line treatment. Isolated studies conducted between 2006 and 2013 have shown treatment failure rates above 10% in Angola, Burkina Faso, the Gambia, Ghana, Malawi, the Niger, Nigeria and Zimbabwe; however, these rates are likely to be outliers, because treatment failure rates have generally remained below 10%. In South America, all studies conducted between 2005 and 2011 in Brazil, Colombia, Ecuador and Suriname reported treatment failure rates of less than 5% following treatment with AL. As with ASAQ, continued monitoring of the treatment efficacy of AL in these countries is recommended.

The efficacy of dihydroartemisinin-piperaquine (DHA-PPQ) is vulnerable in areas with existing piperaquine resistance. Currently, seven countries in South-East Asia and the Western Pacific are recommending DHA-PPQ as their first- or second-line treatment (Cambodia, China, Indonesia, Myanmar, Papua New Guinea, Thailand and Viet Nam). An increase in treatment failure was observed in Cambodia in 2010, following a change in national policy to treatment with DHA-PPQ. The median treatment failure rate in Cambodia between 2005 and 2014 was 8.1%, with 11 studies observing treatment failure rates exceeding 10%. In China and Viet Nam, no treatment failures were observed, while Myanmar had a median treatment failure rate of 1.3%.

A molecular marker of artemisinin resistance was recently identified. Mutations in the Kelch 13 (K13) propeller region are associated with delayed parasite clearance, both in vitro and in vivo. The identification of the K13 marker for artemisinin resistance has allowed a more refined definition of resistance that includes information on the genotype. However, as research on mutations associated with artemisinin resistance is still evolving, the definition of artemisinin resistance may require further modification. So far, 186 K13 alleles, including 108 non-synonymous mutations, have been reported.

Treatment or prophylactic failure with chloroquine for *P. vivax* malaria has been observed in 24 countries. Treatment failure with chloroquine on or before day 28, or prophylactic failure with chloroquine, has been observed in 24 countries: Afghanistan, Brazil, Bolivia, Cambodia, China, Colombia, Ethiopia, Guyana, India, Indonesia, Madagascar, Malaysia, Myanmar, Pakistan, Papua New Guinea, Peru, Republic of Korea (after treatment with hydroxychloroquine), the Solomon Islands, Sri Lanka, Thailand, Timor-Leste, Turkey, Vanuatu and Viet Nam (*28*). At least one true case of chloroquine resistance (with whole blood concentrations of chloroquine plus desethylchloroquine >100 ng/mL on the day of failure) has been confirmed in 10 countries: Bolivia, Brazil, Ethiopia, Indonesia, Malaysia, Myanmar, Papua New Guinea, Peru, the Solomon Islands and Thailand. ACT provides effective treatment against *P. vivax*, with the exception of treatment with artesunate

plus SP; in this case, resistance to the partner drug may significantly compromise efficacy against *P. vivax*. Partner drugs may offer temporary resolution of symptoms, but relapses commonly follow unless primaquine is given. For example, relapses occur earlier following treatment with AL than with DHA-PPQ or ASMQ, for parasites with short latency relapses, because lumefantrine is eliminated more rapidly than is either mefloquine or piperaquine.

5.7 Disease outbreaks

Although malaria cases and deaths have declined globally, rates of decline have varied and certain areas have shown increases in reported malaria cases. Substantial progress has been made in controlling malaria in each WHO region. Nevertheless, populations remain vulnerable to increases in numbers of cases, especially if efforts to control malaria are reduced, or there are climatic conditions that favour malaria transmission, or there are population movements that increase importation of malaria. NMCPs need to be constantly vigilant to ensure that the progress they have made is not reversed. If a control programme is weakened or abandoned, devastating outbreaks or epidemics can occur. The vast majority of resurgences in the past 80 years (91%) have been due, at least in part, to weakening of malaria control efforts, with resource constraints being the most commonly identified factor (57%) (*29*).

The threat of resurgent malaria is present across all settings. An increased number of cases has recently been reported from a number of countries, including Cambodia, Djibouti, Madagascar, Uganda and Venezuela (Bolivarian Republic of). Greater awareness of this threat and development of systems to minimize it are key to further progress in malaria control. Adequate resources are needed to increase (or to maintain high levels of) intervention coverage, to reduce the risk of increases in malaria cases. Well developed systems for surveillance of interventions and malaria disease are necessary to detect changes in disease incidence and possible cause. The accuracy, completeness and timeliness of reporting of surveillance data needs to be monitored, to ensure that systems will detect increases in cases; also, there is a need for mechanisms that will ensure rapid delivery of intensified control measures when such increases are detected.

5.8 Other challenges

Additional challenges may arise or may assume greater importance as the malaria burden is further reduced. Sections 5.1–5.7 highlighted some of the long-standing challenges that must be overcome if the malaria burden is to be further decreased. The list is not exhaustive, and further challenges may arise or may assume greater importance in the future, as the malaria burden is further reduced. For example, as malaria incidence falls, the disease often becomes increasingly concentrated in marginalized population groups, including high-risk occupational groups; ethnic, religious and political minorities; and communities living in hard-to-reach areas and border regions. Provision of services to these groups may be more difficult and more costly due to infrastructural challenges, security concerns, language barriers, traditional beliefs and political considerations. Moreover, as the incidence of malaria is reduced, naturally acquired immunity to the disease wanes. Consequently, although new infections are less likely to occur, these infections can rapidly lead to illness, which can be severe, and can more easily spread via the mosquito vector from one person to another.

Another important challenge is that many people who are infected with malaria parasites remain asymptomatic or undiagnosed and are therefore invisible to the health system. Further, in some settings the density of parasitaemia is so low in a substantial proportion of individuals that it cannot be detected with current routine diagnostic tools. These people unwittingly contribute to the cycle of malaria transmission. If future disease control and elimination strategies are to succeed, they will need to take into account this large infectious parasite reservoir.

In some situations transmission of malaria parasites can continue even when universal coverage with insecticidal nets or spraying has been achieved, such as when mosquitoes bite in the early evening, or where they are outdoor biting or resting. Consequently, they can evade the most frequently used vector control interventions, and maintain transmission of malaria. Such residual malaria transmission becomes increasingly important to tackle as vector control coverage increases.

To overcome the range of challenges that malaria control programmes face, it will be necessary to develop new tools and strategies for delivering interventions. Malaria control programmes in 2015 are deploying tools such as LLINs, RDTs and ACT that were not available in 2000. Similar innovation and wide-scale deployment of new tools will be required in the next 15 years for malaria programmes to advance further and overcome the challenges they currently face.

6. Moving forward

To address remaining and emerging challenges, WHO developed a *Global technical strategy for malaria 2016–2030.* The strategy was developed under the guidance of a Steering Committee that comprised leading malaria technical experts, scientists and country representatives. Oversight was provided by the MPAC. During the strategy development process, WHO consulted all affected countries through a series of seven regional consultations and, in July–August 2014, held a public web consultation. The strategy was developed in close alignment with the RBM Partnership's *Action and investment to defeat malaria 2016–2030 – for a malaria-free world* to ensure shared goals and complementarity. The WHO *Global technical strategy for malaria 2016–2030,* was adopted by the World Health Assembly in May 2015. WHO is now working on developing regional implementation plans to roll out the technical strategy.

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. The vision of WHO and the global malaria community is a world free of malaria. As part of this vision, the strategy sets ambitious yet feasible global targets for 2030 with milestones for 2020 and 2025 (Table 6.1). Countries will set their own national or subnational targets, which may differ from the global targets.

Table 6.1 Goals, milestones and targets of the *Global technical strategy for malaria 2016–2030* and *Action and investment to defeat 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* provides a framework for developing programmes that are tailored to local circumstances, with the aim of accelerating progress towards malaria elimination. The strategy has three main building blocks. Pillar 1 is to ensure universal access to malaria prevention, diagnosis and treatment. All core malaria interventions – namely vector control, chemoprevention, diagnostic testing and treatment – should be expanded to cover all populations in need of them. Pillar 2 is to accelerate efforts towards elimination and attainment of malaria-free status. In addition to expanding interventions to all populations at risk, all countries should intensify efforts to eliminate the disease, especially in areas with low transmission. Pillar 3 is to transform malaria surveillance into a core intervention. Strengthening malaria surveillance is a critical factor for programme planning and implementation, and for accelerating progress towards elimination. Maximal progress in these three areas will depend on the development of new tools and innovations in service delivery. It will also depend on strong political commitment, robust financing and increased multisectoral collaboration.

Malaria investments need to increase substantially to achieve the milestones and goals set out in the *Global technical strategy for malaria 2016–2030*. It is estimated that annual investments in malaria control and elimination will need to increase to a total of US$ 6.4 billion per year by 2020 to meet the first milestone of at least a 40% reduction in malaria incidence and mortality rates. This should then further increase to an annual investment of US$ 7.7 billion by 2025 to meet the second milestone of at least a 75% reduction. To achieve the 90% reduction goal, total annual malaria spending will need to reach an estimated US$ 8.7 billion by 2030. If these resources can be secured, and malaria interventions delivered with the resources, the malaria landscape will change even more dramatically than it has over the past 15 years, and a pathway will be set for the eventual eradication of this ancient disease.

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Annexes

Annex 1 – Data sources and methods

Section 1: Introduction

Table 1.1 Declarations and plans containing targets for malaria control and elimination 2000–2015
The table shows major declarations and plans that contain targets for malaria control and elimination 2000–2015.

Table 1.2 MDG 6 and associated malaria target and indicators
The table shows the Millennium Development Goal (MDG), target and indicators. Source: *Millennium Development Goals Indicators* (*1*).

Table 1.3 Roll Back Malaria objectives, targets for 2015 and indicators for measuring progress
This table shows the Global Malaria Action Plan (GMAP) targets and indicators. Source: *World malaria report 2012 (2) and Household survey indicators for malaria control* (*3*).

Section 2: Trends in infection prevalence, cases and deaths

Table 2.1 Estimated malaria cases and deaths, by WHO region, 2000–2015
The number of malaria cases was estimated by one of two methods:

i) For countries outside Africa and for low-transmission countries in Africa: estimates of the number of cases were made by adjusting the number of reported malaria cases for completeness of reporting, the likelihood that cases are parasite positive and the extent of health-service use. The procedure, which is described in the *World malaria report 2008* (*4,5*), combines data reported by national malaria control programmes (NMCPs) (reported cases, reporting completeness, likelihood that cases are parasite positive) with those obtained from nationally representative household surveys on health-service use. Projections to 2015 were made using the results of country-specific segmented regression analyses (*6*). The trend line from the most recent segment of years was extrapolated to project cases and deaths for 2014 and 2015. The number of *P. vivax* malaria cases in each country was estimated by multiplying the country's reported proportion of cases that are *P. vivax* by the total number of estimated cases for the country.

ii) For high-transmission countries in Africa: for some African countries, the quality of surveillance data did not permit a convincing estimate to be made from the number of reported cases. Hence, estimates of the number of malaria cases were derived from information on parasite prevalence obtained from household surveys. First, parasite prevalence data from 27 573 georeferenced population clusters between 1995 and 2014 were assembled within a spatiotemporal Bayesian geostatistical model, along with environmental and sociodemographic covariates and data on use of insecticide-treated mosquito nets (ITNs) and access to artemisinin-based combination therapies (ACTs). The geospatial model enabled predictions to be made of *P. falciparum* parasite prevalence in children aged 2–10 years at a resolution of 5 × 5 km^2 across all endemic African countries for each year from 2000 to 2015. Second, an ensemble model was developed to predict malaria incidence as a function of parasite prevalence. The model was then applied to the estimated parasite prevalence, to obtain estimates of the malaria case incidence at 5 × 5 km^2 resolution for each year from 2000 to 2015. Data for each 5 × 5 km^2 area were then aggregated within country and regional boundaries to obtain national estimates and regional estimates of malaria cases (*7*).

The number of malaria deaths was estimated by one of two methods:

i) For countries outside Africa and for low-transmission countries in Africa: the number of deaths was estimated by multiplying the estimated number of *P. falciparum* malaria cases by a fixed case fatality rate for each country, as described in the *World malaria report 2008* (*4*). This method was used for all countries outside Africa and for low-transmission countries in Africa, where estimates of case incidence were derived from routine reporting systems. A case fatality rate of between 0.01% and 0.40% was applied to the estimated number of *P. falciparum* cases, and a case fatality rate of between 0.01% and 0.06% was applied to the estimated number of *P. vivax* cases. For countries in the pre-elimination and elimination phases, and those with vital registration systems that reported more than 50% of all deaths (determined by comparing the number of reported deaths with those expected given a country's population size and crude deaths rate), the number of malaria deaths was derived from the number of reported deaths, adjusting for completeness of reporting.

ii) For countries in Africa with a high proportion of deaths due to malaria: child malaria deaths were estimated using a verbal autopsy multicause model developed by the Maternal and Child Health Epidemiology Estimation Group which estimates causes of death for children aged 1–59 months (*8*). Mortality estimates were derived for seven causes of post-neonatal death (pneumonia, diarrhoea, malaria, meningitis, injuries, pertussis and other disorders), causes arising in the neonatal period (prematurity, birth asphyxia and trauma, sepsis,

and other conditions of the neonate) and other causes (e.g. malnutrition). Deaths due to measles, unknown causes and HIV/AIDS were estimated separately. The resulting cause-specific estimates were adjusted, country by country, to fit the estimated 1–59 month mortality envelopes (excluding HIV and measles deaths) for corresponding years. Estimated malaria parasite prevalence, as described above, was used as a covariate within the model. Deaths in those aged over 5 years were inferred from a relationship between levels of malaria mortality in different age groups and the intensity of malaria transmission (*9*); thus, the estimated malaria mortality rate in children aged under 5 years was used to infer malaria-specific mortality in older age groups.

Table 2.2 Estimated malaria incidence and death rates, by WHO region, 2000–2015
Incidence rates were derived by dividing estimated malaria cases by the population at risk of malaria within each country (calculated as population at high risk + population at low risk/2). The total population of each country was taken from the 2015 revision of the *World population prospects* (*10*) and the proportion at risk of malaria derived from NMCP reports. Malaria death rates were derived by dividing annual malaria deaths by the mid-year population at risk of malaria within each country. Where death rates are quoted for children aged under 5 years, the number of deaths estimated in children aged under 5 years was divided by the estimated number of children aged under 5 years at risk of malaria.

Table 2.3 Estimated number of malaria deaths in children aged under 5 years, by WHO region, 2015
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria deaths in children aged under 5 years.

Figure 2.1 Estimated malaria case incidence and death rates globally, 2000–2015
See the methods notes for Table 2.1 and Table 2.2 for the calculation of incidence and death rates globally.

Figure 2.2 Percentage decrease in (a) estimated malaria case incidence and (b) malaria death rate, by WHO region, 2000–2015.
See the methods notes for Table 2.1 and Table 2.2 for the calculation of incidence and death rates by region.

Figure 2.3 Under-5 mortality rate in sub-Saharan Africa, 2000–2015
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria and total death rates in children aged under 5 years.

Figure 2.4 Leading causes of death among children aged under 5 years in sub-Saharan Africa, 2000–2015
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria death rates and death rates by other causes in children aged under 5 years.

Figure 2.5 Estimated *P. falciparum* infection prevalence among children aged 2–10 years ($PfPR_{2-10}$) in 2000 and 2015
See the methods notes for Table 2.1 for the estimation of malaria parasite prevalence. This figure was produced by the University of Oxford Malaria Atlas Project (*7*).

Figure 2.6 Estimated change in malaria case incidence 2000–2015, by WHO region
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria case incidence by WHO region.

Table 2.4 Summary of trends in reported malaria case incidence 2000–2015, by WHO region
The main source of information on reported numbers of malaria cases and deaths are the disease surveillance systems operated by ministries of health. Data from such systems have three strengths: (i) case reports are recorded continuously over time and can thus reflect changes in the implementation of interventions or other factors; (ii) routine case and death reports are often available for all geographical units of a country; and (iii) the data reflect the burden that malaria places on the health system. Changes in the numbers of cases and deaths reported by countries do not, however, necessarily reflect changes in the incidence of disease in the general population, for several reasons. First, not all health facilities report each month; hence, variations in case numbers may reflect fluctuations in the number of health facilities reporting rather than a change in underlying disease incidence. Second, routine reporting systems often do not include patients attending private clinics or morbidity treated at home, so disease trends in health facilities may not reflect trends in the entire community. Finally, not all malaria cases reported are confirmed by microscopy or rapid diagnostic testing (RDT); hence, some of the cases reported as malaria may actually be other febrile illnesses (*5,11*). When reviewing data supplied by ministries of health in malaria endemic countries, the following strategy was used to minimize the influence of these sources of error and bias:

- Focusing on confirmed cases (by microscopy or RDT) to ensure that malaria (not other febrile illnesses) was tracked. For high burden countries in the WHO African Region, where there is little confirmation of cases, the numbers of malaria admissions (inpatient cases) and deaths were reviewed, because the predictive value of malaria diagnosis for an admitted patient is considered to be higher than that of an outpatient diagnosis. In such countries, the analysis may be heavily influenced by trends in cases of severe malaria rather than trends in all cases.
- Monitoring the number of laboratory tests undertaken. It is useful to measure the annual blood examination rate (ABER), to ensure that potential differences in diagnostic effort or completeness of reporting are taken into account. To discern decreases in malaria incidence, the ABER should ideally remain constant or increase over time. In addition, it is useful to monitor the percentage of suspected malaria cases that are

examined with a parasite-based test. Some authorities recommend that the ABER should be >10%, to ensure that all febrile cases are examined; however, the observed rate depends partly on how the population at risk is estimated, and trends may still be valid if the rate is <10%. A value of 10% may not be sufficient to detect all febrile cases. In Solomon Islands, a highly endemic country, the ABER exceeds 60%, with a slide positivity rate (SPR) of 25%, achieved solely through passive case detection.

- Monitoring trends in the SPR or RDT positivity rate. This rate should be less severely distorted by variations in the ABER than trends in the number of confirmed cases.
- Monitoring malaria admissions and deaths. For high-burden African countries, when reviewing the number of malaria admissions or deaths, it is also informative to examine the number of admissions from all causes, which should remain constant or increase over time. If the total number of admissions fluctuates, then it may be preferable to examine the percentage of admissions or deaths due to malaria, because this proportion is less sensitive to variation in reporting rates than the number of malaria admissions or deaths.
- Monitoring the number of cases detected in the surveillance system in relation to the total number of cases estimated to occur in a country. Trends derived from countries with high case detection rates are more likely to reflect trends in the broader community. When examining trends in the number of deaths, it is useful to compare the total number of deaths occurring in health facilities with the total number of deaths estimated to occur in the country.
- Examining the consistency of trends. Unusual variation in the number of cases or deaths that cannot be explained by climate or other factors, or inconsistency between trends in cases and in deaths, can suggest deficiencies in reporting systems.
- Monitoring changes in the proportion of cases due to *P. falciparum* or the proportion of cases occurring in children aged under 5 years. Decreases in the incidence of *P. falciparum* malaria may precede decreases in *P. vivax* malaria, and there may be a gradual shift in the proportion of cases occurring in children aged under 5 years; however, unusual fluctuations in these proportions may point to changes in health-facility reporting or to errors in recording.

These procedures help to rule out data-related factors (e.g. incomplete reporting or changes in diagnostic practice) as explanations for a change in the incidence of disease. The aim is to ensure that trends in health-facility data reflect changes in the wider community, which is more likely in situations where changes in disease incidence are large; coverage with public health services is high; and interventions promoting change, such as use of ITNs, are delivered throughout the community rather than being restricted to health facilities.

Where data reported by NMCPs were sufficiently complete and consistent to reliably assess trends between 2000 and 2014, a country was classified as being on track to achieve, by 2015, a decrease in case incidence of >75%, 50–75% or <50%, or to experience an increase in case incidence by 2015, using 2000 as the baseline. A 75% reduction in malaria case incidence is equivalent to a 5% reduction per year between 2000 and 2015. Thus, to achieve a reduction of 75% by 2015, countries need to have reduced the incidence of malaria by at least 70% between 2000 and 2014. Countries that reduced malaria incidence rates by 48–70% between 2000 and 2014 are projected to achieve reductions in malaria case incidence of 50–75% in 2015.

Table 2.5 Summary of trends in estimated malaria case incidence 2000–2015, for countries in which trends could not be evaluated from reported data but can be assessed through modeling

See the methods notes for Table 2.1 and Table 2.2 for the estimation of incidence rates in high-transmission countries, where the quality of surveillance data did not permit a convincing estimate to be made from the number of reported cases.

Figure 2.7 Estimated number of cases in 2000 and 2015, by WHO region

The figure shows changes in the estimated number of cases by country within each WHO region. Each point represents a country. See the methods notes for Table 2.1 for the estimation of the number of malaria cases.

Figure 2.8 Number of countries with fewer than 1000, 100 and 10 cases, 2000–2015

See the methods notes for Table 2.1 for the estimation of the number of malaria cases.

Table 2.6 Classification of countries by programme phase, December 2015

The criteria used to classify countries according to programme phase were updated in 2012 to facilitate tracking of progress over time (*2*). These focus on three main components: the malaria epidemiological situation, case-management practices and the state of the surveillance system, as shown in Table A.1. The assessment concentrates on the situation in those districts of the country reporting the highest annual parasite index (API).

Table A.1 Criteria for classifying countries according to malaria programme phase

	Pre-elimination	Elimination	Prevention of reintroduction
Malaria situation in areas with most intense transmission			(1) Recently endemic country with zero local transmission for at least 3 years; or (2) country on the register or supplementary list that has ongoing local transmissiona
Test positivity rate	<5% among suspected malaria patients (PCD) throughout the year		
API in the district with the highest number of cases/1000 population/ year (ACD and PCD),b averaged over the past 2 years	<5 (i.e. fewer than 5 cases/1000 population)	<1 (i.e. fewer than 1 case/1000 population)	
Total number of reported malaria cases nationwide		A manageable number (e.g. <1000 cases, local and imported) nationwide	
Case management			Imported malaria. Maintain capacity to detect malaria infection and manage clinical disease
All cases detected in the private sector are microscopically confirmed	National policy being rolled out	Yes	Yes
All cases detected in the public sector are microscopically confirmed	National policy being rolled out	Yes	Yes
Nationwide microscopy quality assurance system covers public and private sector	Initiated	Yes	Yes
Radical treatment with primaquine for *P. vivax*	National policy being updated	National policy fully implemented	Yes
Treatment with ACT plus single-dose primaquine for *P. falciparum*	National policy being updated	National policy fully implemented	Yes
Surveillance			Vigilance by the general health services
Malaria is a notifiable disease nationwide (<24–48 hours)	Laws and systems being put in place	Yes	Yes
Centralized register on cases, foci and vectors	Initiated	Yes	Yes
Malaria elimination database	Initiated	Yes	Certification process (optional)
Active case detection in groups at high risk or with poor access to services (proactive case detection)	Initiated	Yes	In residual and cleared-up foci, among high-risk population groups
Case and foci investigation and classification (including reactive case detection and entomological investigation)	Initiated	Yes	Yes

ABER: annual blood examination rate; ACD: active case detection; API: annual parasite index; PCD: passive case detection.
[a] Ongoing local transmission = 2 consecutive years of local *P. falciparum malaria transmission, or 3 consecutive years of local P. vivax malaria transmission, in the same locality or otherwise epidemiologically linked.*
[b] The API has to be evaluated against the diagnostic activity in the risk area (measured as the ABER). Low values of ABER in a district raise the possibility that more cases would be found with improved diagnostic efforts.

Figure 2.9 Indigenous malaria cases in the WHO European Region, by country, 1990–2015
The number of indigenous cases shown are those reported to WHO by NMCPs.

Figure 2.10 Indigenous malaria cases in the WHO European Region by parasite species, 2000–2015
The number of indigenous cases shown are those reported to WHO by NMCPs.

Section 3: Coverage of key interventions

Figure 3.1 Proportion of population at risk with access to an ITN and proportion sleeping under an ITN, sub-Saharan Africa, 2000–2015
Estimates of ITN coverage were derived from a model developed by the Malaria Atlas Project (*12*). A two-stage process was followed. First, a mechanism was defined for estimating net crop – that is, the total number of ITNs in households in a country at a given point in time – taking into account inputs to the system (e.g. deliveries of ITNs to a country) and outputs (e.g. loss of ITNs from households). Second, empirical modelling was used to translate estimated net crops into resulting levels of coverage (e.g. access within households, use in all ages and use among children aged under 5 years).

The model incorporates three sources of information:

- data on the number of long-lasting insecticidal nets (LLINs) delivered by manufacturers to countries, as provided by Milliner Global Associates to WHO;
- data on ITNs distributed within countries, as reported by NMCPs to WHO; and
- nationally representative household surveys from 39 sub-Saharan African countries, from 2001 to 2014.

Countries and populations at risk

The main analysis covered 40 of the 47 malaria endemic countries or areas of sub-Saharan Africa. The islands of Mayotte (France) (for which no ITN delivery or distribution data were available) and Cabo Verde (which does not distribute ITNs) were excluded, as were the low-transmission countries of Namibia, Sao Tome and Principe, South Africa and Swaziland for which ITNs make up a small proportion of vector control. Analyses were limited to populations categorized as being at risk by NMCPs.

Estimating national net crops through time

As described by Flaxman et al. (*13*) with a large fraction of these resources directed toward the distribution of ITNs, national ITN systems were represented using a discrete

time stock-and-flow model. Nets delivered to a country by manufacturers were modelled as first entering a "country stock" compartment (i.e. stored in-country but not yet distributed to households). Nets were then available from this stock for distribution to households by the NMCP or other distribution channels. To accommodate uncertainty in net distribution, number of nets distributed in a given year were specified as a range, with all available country stock as one extreme (the maximum nets that could be delivered) and the NMCP-reported value (the assumed minimum distribution level) as the other. New nets reaching households joined older nets remaining from earlier time steps to constitute the total household net crop, with the duration of net retention by households governed by a loss function. Rather than fitting the loss function to a small external dataset, as was done by Flaxman et al., the loss function was fitted directly to the distribution and net crop data within the stock-and-flow model itself. Loss functions were fitted on a country-by-country basis, allowed to vary through time, and defined separately for conventional ITNs (cITNs) and LLINs. The fitted loss functions were compared to existing assumptions about rates of net loss from households. The stock-and-flow model was fitted using Bayesian inference and Markov chain Monte Carlo methods, providing time-series estimates of national household net crop for cITNs and LLINs in each country along with evaluation of under-distribution, all with posterior credible intervals.

Estimating national ITN access and use indicators from net crop

Rates of ITN access within households depend not only on the total number of ITNs in a country (i.e. net crop), but on how those nets are distributed between households. One aspect that is known to strongly influence the relationship between net crop and household ownership distribution is the size of households in different countries (*14*), which varies greatly across sub-Saharan Africa.

Many recent national surveys report the number of ITNs observed in each surveyed household. This makes is possible to not only estimate net crop, but also to generate a histogram that summarizes the net ownership pattern (i.e. the proportion of households with zero nets, one net, two nets and so on). In this way, the size of the net crop was linked to distribution patterns among households, while accounting for household size, so that ownership distributions for each household size stratum could be generated. The bivariate histogram of net crop to distribution of nets among households by household size made it possible to calculate the proportion of households with at least one ITN and, because the number of both ITNs and people in every household can be triangulated, to directly calculate the two additional indicators: the proportion of households with at least one ITN for every two people, and the proportion of population with access to an ITN within their household. For the final ITN indicator – the proportion of the population who slept under an ITN the previous night – the relationship between ITN and access was defined using 62 surveys where both indicators were available ($\text{ITN use}_{\text{all ages}} = 0.8133 * \text{ITN access}_{\text{all ages}} + 0.0026$, $R^2 = 0.773$). This relationship was applied to the Malaria Atlas Project's country-year estimates of household access to obtain ITN use among all ages. The same method was used to obtain the country-year estimates of ITN use in children aged under 5 years ($\text{ITN use}_{\text{children under five}} = 0.9327 * \text{ITN access}_{\text{all ages}} + 0.0282$, $R^2 = 0.754$).

Figure 3.2 Proportion of population sleeping under an ITN, sub-Saharan Africa, 2015
See the methods notes for Figure 3.1 for the estimation of population sleeping under ITNs.

Figure 3.3 Number of ITNs/LLINs delivered and distributed, and the estimated number of LLINs needed annually to achieve universal access in sub-Saharan Africa, 2004–2015
See the methods notes for Figure 3.1 for the sources of LLINs delivered and distributed. For estimating ITN requirements to achieve universal access, the two-stage modelling framework outlined in the notes for Figure 3.1 represented the pathway from ITN delivery from manufacturers through to resulting levels of net access and use in households. It also accounted for two potential factors that may reduce access levels (i.e. the efficiency of allocation of nets to households during distribution, and the loss of nets from households over time), and allowed these to be quantified through time for each country. Using this architecture, it was possible to simulate delivery of any volume of ITNs to a given country over a given future time period, to predict the levels of access and use that would result, and to examine the impact of different amounts of allocation efficiency and net loss. The model was used to estimate the levels of access likely to be achieved by 2015 under a broad spectrum of LLIN delivery levels across the 4-year period. These simulations were run under two scenarios: (i) 'business-as-usual', where current levels were maintained for allocation efficiency and net loss (approximately a 2-year median retention time); and (ii) with both maximized allocation efficiency and a 3-year median retention time.

Figure 3.4 Proportion of the population at risk protected by IRS by WHO region, 2009–2014
The number of persons protected by indoor residual spraying (IRS) and the population at risk of malaria was reported by NMCPs to WHO. See the methods notes for Table 2.2 for the calculation of the population at risk.

Figure 3.5 Proportion of the population protected by IRS or with access to ITNs in sub-Saharan Africa, 2014
See the methods notes for Figure 3.1 for derivation of the population at risk with access to an ITN in their household in 2015, and Figure 3.4 for the proportion benefitting from IRS. The proportion benefitting from IRS in 2015 was assumed to be the same as 2014 because this was the latest year for which data on populations protected by IRS were available. Analysis of household survey data indicates that about half

of the people in IRS-sprayed households are also protected by ITNs (*15*). Therefore, the proportion of the population protected by either ITNs or IRS was estimated by adding half the proportion of the population protected by IRS to the proportion with access to an ITN.

Figure 3.6 Proportion of pregnant women receiving IPTp, by dose, sub-Saharan Africa, 2007–2014

Women are eligible to receive intermittent preventive treatment in pregnancy (IPTp) after the first trimester of pregnancy; therefore, the total number of IPTp-eligible women is the total number of second- and third-trimester pregnancies in a given calendar year. This was calculated for years 2001 through 2014 by adding total live births and spontaneous pregnancy loss, specifically miscarriages and stillbirths, after the first trimester. Spontaneous pregnancy loss was previously calculated by Dellicour et al. (*16*). Country-specific estimates of IPTp coverage were calculated as the ratios of volumes of IPTp doses distributed to the estimated numbers of IPTp-eligible pregnant women in a given year. Antenatal care (ANC) attendance rates were derived in the same way, using the number of first-time ANC visits reported through routine information systems. Local linear interpolation was used to compute missing values. In countries that did not report data for the first year of the policy, or in any year before the policy adoption, the quantities of IPTp distributed were assumed to be zero one year before the policy adoption, allowing for interpolation of coverage estimates relative to reported volumes in later years. For each country, the percentage of pregnant women attending ANC and receiving IPTp doses were calculated only for years in which NMCPs reported that a nationwide IPTp policy was in place. Uncertainty around the point estimates was determined by using Monte Carlo simulations to sample from specified input distributions. Sampling from these distributions yielded 1000 point estimates for country-level IPTp dose-specific coverage and ANC attendance for each year, which were then summarized by country-specific means and 95% confidence intervals. Locally estimated regression (*17*), using the 1000 country-level estimates, was used to predict the continental coverage for each year.

Figure 3.7 Proportion of pregnant women receiving at least one dose of IPTp, sub-Saharan Africa, 2013–2014

See the methods notes for Figure 3.6 for the estimation of percentage of pregnant women receiving at least one dose of IPTp.

Figure 3.8 Proportion of suspected malaria cases attending public health facilities that received a diagnostic test, by WHO region, 2005–2014

The proportion of suspected malaria cases receiving a malaria diagnostic test in public facilities was calculated from NMCP reports to WHO. The number of malaria diagnostic tests performed included the number of RDTs and microscopic slide examinations. Few countries reported the number of suspected malaria cases as an independent value. For countries reporting the total number of malaria cases as presumed malaria cases (i.e. cases classified as malaria without undergoing malaria parasitological testing) and confirmed malaria cases, the number of suspected cases was calculated by adding the number of negative diagnostic tests to the number of presumed and confirmed cases. Using this method for countries that reported only confirmed malaria cases for the total number of malaria cases, the number of suspected cases is equal to the number of cases tested. This is not informative in determining the proportion of suspected cases tested; therefore, countries were excluded from the regional calculation for years in which they reported only confirmed cases for total malaria cases.

Figure 3.9 Proportion of febrile children presenting for treatment, by health sector, sub-Saharan Africa, 2013–2015

The estimates for source of care for febrile children were derived using data from 18 nationally representative household surveys (demographic and health surveys [DHS] and malaria indicator surveys [MIS]) conducted from 2013 through 2015. The surveys included the following data, provided by caregivers, on each child aged under 5 years living in the surveyed households: if the child had had a fever in the 2 weeks preceding the survey, whether care was sought for the fever, and if so, where care was sought, whether a diagnostic test was administered, and the treatment received.

Figure 3.10 Proportion of febrile children receiving a blood test, by health sector, sub-Saharan Africa, 2013–2015

See the methods notes for Figure 3.9.

Figure 3.11 Number of RDTs sold by manufacturers and distributed by NMCPs, by WHO region, 2005–2014

The numbers of RDTs distributed by WHO region are the annual totals reported to be distributed by NMCPs. Manufacturers reporting the number of RDT sales between 2008 and 2014 included 44 manufacturers that participate in RDT product testing by WHO, the Foundation for Innovative New Diagnostics (FIND), the United States Centers for Disease Control and Prevention (CDC) and the Special Programme for Research and Training in Tropical Diseases (TDR). The number of RDTs reported by manufacturers represents total sales to the public and private sector worldwide.

Figure 3.12 Ratio of ACT treatment courses distributed to diagnostic tests performed (RDTs or microscopy), WHO African Region, 2006–2014

The number of RDTs and ACTs distributed within countries by national programmes are reported by NMCPs to WHO, as are the number of microscopic examinations of blood slides performed for malaria parasites and number of RDTs performed. This figure shows the ratio of these data over time. The test positivity rate was calculated as the total number of positive tests (slide examinations and RDTs) divided by the total number tests (slides examinations and RDTs) reported by countries in the WHO African Region in 2014.

Figure 3.13 Estimated proportion of children aged under 5 years with confirmed *P. falciparum* malaria who received ACTs, sub-Saharan Africa, 2003–2014

The proportion of children with uncomplicated malaria (defined as fever in the 2 weeks preceding the survey, and parasite infection measured by RDT at the time of the survey) receiving an ACT was estimated for all countries in sub-Saharan Africa 2003–2014 using a three-step modelling approach:

1. Fitting a model to predict whether a child with fever has a malaria infection: Recent MIS and DHS include the malaria parasite infection status of a child, assessed from an RDT given at the time of the survey. It was assumed that a positive RDT provides a reasonable measure of a 2-week period prevalence of infection (*18–20*). A logistic regression model was created to predict malaria parasite infection among febrile children. Covariates in the model included the child's age and sex, household wealth quintile, ITN ownership, facility type where treatment was sought (public/other), urban/rural status, and malaria transmission intensity as measured by proportion of children aged 2–10 years infected with *P. falciparum* (*Pf*PR_{2-10}).
2. Predicting the infection status of children in surveys in which RDTs were not used: Coefficients estimated from the logistic regression model in step 1 were used to obtain predictions of infection status among all children with a fever from DHS, MIS and multiple indicator cluster surveys (MICS) in which RDT testing had not been performed. The national survey-weighted proportion of febrile children with a malaria parasite infection (RDT measured or imputed) aged under 5 years who received an ACT was then calculated for all surveys.
3. Estimating the proportion of children with malaria that received an ACT: The ACT distribution data reported by NMCPs were used to calculate a predicted ACT "availability" per person at risk for *P. falciparum* malaria in each country. A linear model was then created to predict the proportion of children with malaria receiving an ACT, using ACT availability per capita in the current and previous year as a covariate, with additional covariates including national ITN coverage (by year), measles vaccination coverage, gross national income, and the proportion of births with a skilled birth attendant (*20*). The model was run in a Bayesian framework using Markov chain Monte Carlo methods, and included uncorrelated random effects for each country and correlated (autoregressive) random effects for each year. The proportion of children who received ACTs for each country and year (2003–2014) was imputed for non-survey years, based on the relationship between ACT coverage and ACT availability across countries.

Household survey data were considered if they included a module assessing fever treatment behaviour for children aged under 5 years, categorized by type of antimalarial received. For the period 2003–2014, 16 MIS, 61 DHS and 22 MICS were included. Annual estimates of mean *P. falciparum* parasite rates in children aged 2–10 years (*Pf*PR_{2-10}), as well as the total population at malaria risk, were ascertained from the Malaria Atlas Project (see methods notes for Table 2.1 and Table 2.2).

Figure 3.14 Proportion of febrile children who receive an ACT among those who receive any antimalarial, sub-Saharan Africa, 2004–2015

See the methods notes for Figure 3.9.

Figure 3.15 Proportion of febrile children receiving antimalarial treatments, by type, sub-Saharan Africa, 2013-2015

See the methods notes for Figure 3.9.

Figure 3.16 Proportion of febrile children who receive an ACT among those who receive any antimalarial, by place where care was sought, sub-Saharan Africa, 2013–2015

See the methods notes for Figure 3.9.

Figure 3.17 Number of ACT treatment courses distributed by NMCPs, by WHO region, and ACT treatment courses delivered by manufacturers to the public and private sector, 2005–2014

Data on ACT deliveries were provided by ten manufacturers eligible for procurement by WHO/UNICEF. ACT sales were categorized as either to the public sector or to the private sector. Data on ACTs distributed within countries through the public sector were taken from NMCP reports to WHO.

Figure 3.18 Predicted time series of *Pf*PR_{2-10} across endemic Africa with and without interventions, 2000–2015

The model used to estimate malaria case incidence (described is the methods notes for Table 2.1) is based on various surveys of parasite prevalence undertaken between 2000 and 2015. It also incorporates time-series models of coverage for ITN use, IRS and access to ACTs within each country, and a suite of environmental and sociodemographic covariates. The model was used to predict a spatiotemporal "cube" of age-structured *Pf*PR at 5 × 5 km resolution across all endemic African countries for each year from 2000 to 2015. During the process of modelling, flexible functional forms were fitted to capture the effect of each intervention on declining *Pf*PR as a function of coverage reached and the starting (pre-intervention) *Pf*PR in 2000. Using the observed effect of each intervention, it was possible to generate counterfactual maps estimating contemporary *Pf*PR under hypothetical scenarios without interventions. This "no intervention" counterfactual was then used to estimate the total effect of interventions on parasite prevalence and case incidence.

Figure 3.19 Predicted cumulative number of malaria cases averted by interventions, sub-Saharan Africa, 2000–2015

See the methods notes for Figure 3.18.

Section 4: Costs of malaria control and cost savings

Figure 4.1 Investments in malaria control activities by funding source, 2005–2014

Domestic financing data included contributions from governments of malaria endemic countries for the period 2005–2014 that were obtained from NMCPs for the *World malaria reports.* When domestic financing data were not available for 2014, data from previous years were used. Domestic financing data exclude government spending on case management, including the cost of the time that health workers spend testing, treating and tracking malaria patients and the cost of capital (e.g. infrastructure and vehicles). Data also exclude household spending on malaria prevention and treatment. International financing data were obtained from several sources. The Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) provided disbursed amounts by year and country for the period 2005–2014. Data on funding from the government of the United States of America (USA) were sourced from the US Foreign Assistance Dashboard (*22*), with the technical support of the Kaiser Family Foundation. Funding data were available for the US Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC) and the US Department of Defense. Country-level data were available from USAID only, and only for the period 2006–2014. Financing data for other international funders included annual disbursement flows for the period 2005–2013, obtained from the Organisation for Economic Co-operation and Development (OECD) Creditor Reporting System (CRS) aid activity database. For each year and each funder, the list of regional- and country-level project-type interventions and other technical assistance were abstracted. Contributions to programmes and funds managed by international organizations (e.g. Global Fund contributions) were excluded. International annual contributions for 2014 were estimated by projecting linearly 2011-2013 available estimates. To measure funding trends in real terms (i.e. corrected for inflation), all values were converted to constant 2014 US$ using the gross domestic product (GDP) implicit price deflators published by the World Bank (*23*).

Figure 4.2 Investments in malaria control activities by WHO region and funding source, 2005–2014

See the methods notes for Figure 4.1 for investments in malaria control activities by funding source.

Figure 4.3 Expenditures on ITN/LLIN, ACT, RDT and IRS, and trend in international funding, 2004–2014

Manufacturers' sales volumes data on ITNs/LLINs (as provided by Milliner Global Associates to WHO), RDTs (see methods notes for Figure 3.11) and ACTs (see methods notes for Figure 3.16) and the number of people at risk covered by IRS (see methods notes for Figure 3.4) were used to estimate the amount spent each year in preventive and curative commodities.

i) *Calculating expenditures for ITNs/LLINs:* ITN/LLIN sales volumes data were sourced from the Net Mapping Project, which provided data for 47 sub-Saharan African countries from 2004 to 2014 and for 51 malaria endemic countries outside sub-Saharan Africa for the period 2011–2014. LLIN price data originated from a review of country-level transactions information available from the Global Fund's Price & Quality Reporting (PQR) tool (*23*). LLIN price data included the name of the country of delivery, LLIN manufacturer name, net shape, net size, number of nets purchased, unit cost in US$ at the time of the transaction and transaction date. The review of price data concentrated on prices of rectangular nets of any size. For each country and each year, the average procurement price paid per net was calculated. For LLIN price observations for which there was no information on whether freight cost was included, freight cost was assumed not to be included, following the data entry guidelines of the PQR tool (*24*). For price observations for which freight cost was excluded, unit price data were inflated by 20%. For countries missing price data, the regional LLIN average price was imputed.

ii) *Calculating expenditures for IRS:* The unit cost of protecting one person per year with IRS, which varied by year, was estimated by calculating the average cost of covering one person with IRS across 10 countries for the years 2008–2012 (Abt Associates, personal communication, June 2014). IRS commodity cost included the costs of insecticide, shipping and equipment. The costs of spraying operations, local labour and local administration were excluded, to follow the approach used for the other commodities costed in this report.

iii) *Calculating expenditures for RDTs and ACTs*: RDT and ACT sales volumes were sourced from manufacturers' reports to WHO. RDT price data originated from a review of country-level transactions information available from the Global Fund's PQR tool (*24*). RDT average unit price was calculated as the average of all CareStart™ Malaria product prices. ACT price data were sourced from the Management Sciences for Health (MSH) international drug price database (*25*). ACT average treatment price was calculated across all ACT types with price information (including AL, AS-AQ, AS-MQ, AS-SP across different strengths) on the basis of a full dose for treating a 60 kg adult (*26*). ACT and RDT prices were inflated by 20% to reflect the cost of freight and insurance.

Figure 4.4 Provider savings in malaria case management costs attributable to expansion of malaria control activities, 2001–2014

The analysis concentrated on sub-Saharan Africa and took a public provider perspective. Data included:

- number of malaria cases averted from the decline in case incidence rates observed between 2000 and 2015 (see the methods notes for Table 2.1 and Table 2.2, and Figure 3.18);
- proportion of malaria cases estimated to seek care in the public sector from nationally representative household surveys;

- proportion of cases that move to severe stage and that are hospitalized (*27*);
- proportion of suspected cases seeking care at public facilities that receive a blood test using microscopy or RDT (see the methods notes for Figure 3.8); and
- proportion of children with malaria who received an ACT, another antimalarial (chloroquine or sulphadoxine-pyrimethamine) or medicine (see the methods notes for Figure 3.13 extended to non-ACT)

To estimate the savings incurred by health systems due to a reduced number of cases, it was assumed that the cases averted that would have attended public health facilities would have received an antimalarial if diagnosed presumptively or if they were tested either by microscopy or RDT and the test result was positive. The cost of blood test diagnosis was assumed to be equal to the price of an RDT. Medicine procurement prices were sourced from the MSH international drug price database. For ACT, the average price for treating a 60 kg adult was estimated as described under methods notes for Figure 4.3. Non-ACT medicines were costed at the average price of chloroquine and sulphadoxine-pyrimethamine adult treatment prices. Severe cases were assumed to be treated with quinine, or a similarly priced medicine. Medicine costs were inflated for wastage (10%), freight and insurance (20%), and in-country service delivery (15%). Outpatient visit costs from the perspective of the provider were estimated for each country by calculating the average price of a visit to rural and urban health facilities (without bed) as estimated in the WHO-CHOICE tool (*28*). Similarly, inpatient admission costs were estimated in terms of average unit bed-day stay at primary and tertiary hospitals in each country also using the WHO CHOICE tool. Hospitalization for a severe malaria case was assumed to last for 3 days. An annual inflation rate of 3% was assumed when converting WHO-CHOICE price estimates for 2008 to cover the 2001–2014 period. To measure funding trends in real terms (i.e. corrected for inflation), all values were converted to constant 2014 US$ using the GDP implicit price deflators published by the World Bank (*23*). The cost savings attributable to malaria control interventions were derived from the relative contribution of each intervention in averting cases (see methods notes for Figure 3.18.)

Section 5: Challenges

Figure 5.1 Estimated proportion, and cumulative proportion, of the global number of (a) malaria cases and (b) malaria deaths in 2015 for countries accounting for the highest share of the malaria disease burden
See the methods notes for Table 2.1 for the estimation of malaria cases and deaths.

Figure 5.2 Reduction in malaria incidence, 2000–2015 versus estimated number of cases in a country in 2000
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria cases and incidence rates. Two countries with increases (negative decreases) were excluded from the figure.

Figure 5.3 Proportion and number of people not receiving an intervention, sub-Saharan Africa, 2014
See the methods notes for Figure 3.5, Figure 3.6 and Figure 3.7 for the estimation of the proportion of the target population receiving an intervention. The formula, 100% - (% receiving the intervention), was applied to the population at risk targeted by each intervention to calculate the population not receiving an intervention. See the methods notes for Figure 3.6 for estimation of the population of pregnant women. The population living in households was calculated by utilizing the population at risk, see the methods for Table 2.2 for the derivation of population sizes, and household size, as derived from nationally representative household survey data. The number of children aged under 5 years with malaria infection was estimated by applying the modelled country-specific age distribution of cases (*29*) to the total number of cases, calculated by the methods described for Table 2.1.

Figure 5.4 Population at risk of malaria in sub-Saharan Africa with access to or using vector control, 2014
See the methods notes for Figure 3.5 for the estimation of indicators related to vector-control coverage.

Figure 5.5 Proportion of pregnant women attending ANC and proportion receiving IPTp, by dose, in sub-Saharan Africa, 2014
See the methods notes for Figure 3.7 for the estimation of pregnant women receiving IPTp doses and attending ANC at least once.

Figure 5.6 Proportion of febrile children aged under 5 years receiving antimalarial medicines, by place of where care was sought, among sub-Saharan countries with household surveys, 2013–2015
See the methods notes for Figure 3.9.

Figure 5.7 Number of nurses per 1000 population in malaria endemic countries versus estimated number of malaria deaths*
See the methods notes for Table 2.1 for the estimation of malaria cases. Data on nurses per capita were obtained from the Global Health Observatory Data Repository (nursing and midwifery personnel data by country) (*30*).

Figure 5.8 Proportion of malaria cases seeking care (a) in public sector and (b) private sector versus estimated number of malaria cases, sub-Saharan Africa, 2015
See the methods notes for Table 2.1 for the estimation of malaria cases. The percentage of malaria cases seeking care in the public sector was calculated using nationally representative household survey data applied to estimates of malaria cases.

Figure 5.9 Gross national income per capita versus estimated number of malaria cases, by WHO region, 2015
See the methods notes for Table 2.1 for the estimation of malaria cases. Data on gross national income per capita based on purchasing power parity was obtained from the World Bank (*31*).

Figure 5.10 (a) Domestic government spending on malaria control per capita and (b) international government spending on malaria control per capita versus estimated number of malaria deaths, by WHO region, 2015
See the methods notes for Table 2.1 for the estimation of malaria cases, and the methods notes for Figure 4.1 for the estimation of NMCP spending on malaria control per capita.

Figure 5.11 Estimated spending on malaria treatment, sub-Saharan Africa, 2001–2014
See the methods notes for Figure 4.3 for the estimation of spending on malaria treatment.

Table 5.12 Proportion of estimated malaria cases in each region due to *P. vivax*, 2015
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria cases.

Figure 5.13 Proportion of global *P. vivax* cases occurring in each WHO region
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria cases.

Figure 5.14 Proportion of reported malaria cases due to *P. vivax*, countries with different average caseloads between 2000 and 2014
See the methods notes for Table 2.1 and Table 2.2 for the estimation of malaria cases.

Figure 5.15 Insecticide resistance and monitoring status, by insecticide class and WHO region, 2010–2014
Insecticide resistance monitoring results were collected from NMCP reports to WHO, the African Network for Vector Resistance, Malaria Atlas Project, United States President's Malaria Initiative (PMI) and the published literature. In these studies, confirmed resistance was defined as mosquito mortality <90% in bioassay tests with standard insecticide doses. Where multiple insecticide classes or types, mosquito species or time points were tested, the highest resistance status was considered.

Figure 5.16 Reported pyrethroid resistance status of malaria vectors, measured with insecticide bioassays since 2010
See the methods notes for Figure 5.16 for assessing pyrethroid resistance status.

Section 5.6: Antimalarial drug efficacy and resistance

The WHO global antimalarial drug efficacy database contains data from therapeutic efficacy studies (TES) conducted by NMCPs, research institutes and nongovernmental organizations. Currently, the database holds over 1130 TES, conducted in 62 malaria endemic countries from 2005 to 2015. About 900 of the studies were conducted on the treatment efficacy of ACTs against *P. falciparum*, and the remainder were conducted on treatment efficacy against *P. vivax*.

WHO encourages malaria endemic countries to conduct antimalarial TES on nationally recommended first- and second-line medicines once every 2 years. The WHO protocol provides standardized methods for conducting TES for both *P. falciparum* and *P. vivax*; such studies allow comparison of data across geographical regions and over time. Studies are conducted at sentinel sites, which are selected based on population distribution and density, accessibility, feasibility of supervision, malaria epidemiology, population mobility and migration. Updates on the global status of antimalarial drug efficacy for both *P. falciparum* and *P. vivax* are available on the WHO website (*32*).

Section 6: Moving forward

Table 6.1 Goals, milestones and targets of the *Global technical strategy for malaria 2016–2030* and *Action and investment to defeat malaria 2016–2030*
The table shows the goals, milestones and targets of the *Global technical strategy for malaria 2016–2020* and *Action and investment to defeat malaria 2016–2030* (*33*).

Regional profiles

Figure A. Incidence was derived from reports of confirmed malaria cases in 2014 (by microscopy or RDT) from ministries of health to WHO, and from the number of people living at risk for malaria in each geographical unit, as reported by NMCPs. Values were corrected for reporting completeness by dividing the proportion of health-facility reports received in 2014 by the number expected. If subnational data on population or malaria cases were lacking, an administrative unit was labelled "insufficient data" on the map. In some cases, the subnational data provided by the NMCP did not correspond to a subnational administrative area known to WHO, because of either modifications to administrative boundaries, or the use of names not verifiable by WHO. The maps for countries outside of the WHO Region of the Americas and WHO European Region display a combination of cases per 1000 per year, and parasite prevalence in areas with >10 cases per 1000 population per year. The parasite prevalence used in regions with >10 cases per 1000 is the sum of the rates for *P. falciparum* and *P. vivax* calculated at each location (~1 km^2). The parasite rate for *P. falciparum* was from two sources, one global (*34*) and one for Africa (*7*), with the African source taking precedence over the global source. The parasite rate for *P. vivax* was taken from one global source (*35*). Data on environmental suitability for malaria transmission were used to identify areas that would be free of malaria or have unstable malaria transmission.

Figure B. Sources of data for the financial contributions were as described for Figure 4.1.

Figure C. Sources of data for international and domestic contributions were as described in the notes for Figure 4.1. Funding per capita at risk was calculated by giving populations at low risk for malaria (i.e. those living in areas with fewer than one case reported per 1000 per year) half the weight of populations at high risk (i.e. those living in areas with one or more cases reported per 1000 per year). This procedure was followed to ensure that countries with populations at low risk for malaria could be included in the analysis, and also to take into account the greater need for malaria programmes and funds in countries with larger proportions of their population at high risk for malaria.

Figure D. For the WHO African Region and for Djibouti, Somalia and the Sudan in the WHO Eastern Mediterranean Region, the proportion of the population with access to an ITN was derived from a model that takes into account household survey data, ITNs distributed by NMCPs, and ITNs delivered by manufacturers (see methods notes for Figure 3.1 and Figure 3.2). For other countries, the proportion of the population protected with ITNs was estimated from the number of ITNs delivered by NMCPs in the past 3 years, divided by the population at high risk. It is assumed that each net delivered can cover on average 1.8 people, that conventional nets are re-treated regularly, and that nets have a lifespan of 3 years. The denominator was the population living at high risk for malaria, since it is assumed that, in countries with lower levels of transmission, ITNs will be preferentially targeted to populations at higher risk. IRS coverage was calculated as the total number of people protected with IRS, divided by the population at high risk. There are limited data on the extent to which these interventions overlap, so the two bars simply represent the percentage of populations protected by the respective interventions individually. When no population at high risk was defined for a country, total population at risk was used as a denominator.

For the WHO European Region, the graph presents the number of introduced, imported and indigenous cases by year, reported by NMCPs.

Figure E. Few countries have information systems that record treatments given to individual patients. It is therefore necessary to use aggregate information on numbers of treatment courses delivered to public health facilities, and relate this information to the number of malaria cases among patients attending such facilities. For countries in the WHO African Region, the number of treatment courses available was calculated as the total number of ACT courses distributed by a ministry of health, divided by the estimated number of presumed cases recorded as malaria (without a diagnostic test having been performed) plus confirmed *P. falciparum* malaria cases at public health facilities. In other WHO regions, the number of treatment courses available is shown as a percentage of confirmed malaria cases plus presumed malaria cases reported in the public sector, correcting for reporting completeness. The bars for any antimalarial treatment show the number of all treatment courses supplied in relation to all malaria cases of any *Plasmodium* species, including the ACT to treat *P. falciparum*.

For the WHO European Region, the graph presents the number of indigenous cases reported by NMCPs.

Figure F. The percentage of confirmed cases in which *P. falciparum* or a mixed infection was detected was calculated as the total number of *P. falciparum* and mixed infections between 2010 and 2014, divided by the number of confirmed cases over that period. For countries in the elimination phase, only locally acquired *P. falciparum* cases and mixed infections were considered.

For the WHO African Region, the estimated incidence (as described in the methods for Table 2.1 and Table 2.2) is presented for years 2000 and 2015. The bars represent the estimated incidence and the lines represent the 95% credible intervals of the estimation.

For the WHO European Region, the figure presents the total number of *P. falciparum* and *P. vivax* by year, reported by ministries of health.

Figure G. Analysis of changes in malaria incidence rates focuses on confirmed cases (by microscopy or RDT) reported by ministries of health, to ensure that malaria (not other febrile illnesses) is tracked. For countries in the WHO African Region (except for Algeria, Cabo Verde, Namibia and South Africa), and Papua New Guinea in the WHO Western Pacific Region, the figure shows percentage reductions in the rate of hospital admissions and deaths and in the rate of reported malaria deaths. Although the diagnosis of admitted patients is not always confirmed with a diagnostic test, the predictive value of diagnosis undertaken for an admitted patient is considered to be higher than for outpatient diagnosis. See the methods notes for Table 2.4 for more details of the analysis undertaken.

Country profiles

I. Epidemiological profile

Maps: The procedures used to create the map of confirmed cases were the same as those used for Figure A for the regional profiles; that is, for countries outside the WHO Region of the Americas and the WHO European Region, if an area has >10 cases per 1000, the parasite prevalence is used instead. For countries in the WHO Region of the Americas and WHO European Region, only the cases per 1000 data are used. For the map showing the proportion of cases due to *P. falciparum*, the proportion is only shown

where the number of cases is >0.1 per 1000. Otherwise, the cases per 1000 is shown instead of the proportion. The proportion (where shown) was calculated from the *P. falciparum* prevalence divided by the sum of *P. falciparum* and *P. vivax* prevalence.

Population: The total population of each country was taken from the 2015 revision of the *World population prospects* (*10*). The country population was subdivided into three levels of malaria endemicity, as reported by the NMCPs:

i) areas of high transmission, where the reported incidence of confirmed malaria due to all species was >1 per 1000 population per year in 2014;

ii) areas of low transmission, where the reported malaria case incidence from all species was ≤1 per 1000 population per year in 2014, but >0 (transmission in these areas is generally highly seasonal, with or without epidemic peaks); and

iii) malaria free areas, where there is no continuing local mosquito-borne malaria transmission, and all reported malaria cases are imported; an area is designated "malaria free" when no cases have occurred for several years.

Areas may be naturally malaria free because of factors that are unfavourable for malaria transmission (e.g. altitude or other environmental factors), or they may become malaria free as a result of effective control efforts. In practice, malaria-free areas can be accurately designated by NMCPs only after the local epidemiological situation and the results of entomological and biomarker investigations have been taken into account.

In cases where an NMCP did not provide the number of people living in high- and low-risk areas, the numbers were inferred from subnational case incidence data provided by the programme. The population at risk is the total population living in areas where malaria is endemic (low and high transmission), excluding the population living in malaria free areas. The population at risk is used as the denominator in calculating the coverage of malaria interventions, and is therefore used in assessing current and future needs for malaria control interventions, taking into account the population already covered. For countries in the pre-elimination and elimination stages, "population at risk" is defined by the countries, based on the resident populations in foci where active malaria transmission occurs.

Parasites and vectors: The species of mosquito responsible for malaria transmission in a country, and the species of *Plasmodium* involved, are listed according to information provided by WHO regional offices. The proportion of malaria cases due to *P. falciparum* was estimated from the number of *P. falciparum* and mixed infections detected by microscopy, divided by the total number of malaria cases confirmed by microscopy in 2014.

II. Intervention policies and strategies

Intervention policy: The policies and strategies adopted by each country were reported by NMCPs to WHO. They vary according to the epidemiological setting, socioeconomic factors and the capacity of the NMCP or the country's health system. Adoption of policies does not necessarily imply immediate implementation, nor does it indicate full, continuous implementation nationwide.

Antimalarial treatment policy: Antimalarial treatment policies were reported by NMCPs to WHO.

Therapeutic efficacy tests: Data on therapeutic efficacy were extracted from the WHO global antimalarial drug efficacy database. The data originated from three main sources: published data, unpublished data and regular monitoring data from surveillance studies conducted according to the WHO standard protocol. The percentage of treatment failures is the total number of failures (early treatment failures + late clinical failures + late parasitological failures), divided by the total number of patients who completed the study follow-up. The number of studies included in the analysis and the years during which the studies were conducted are shown for each antimalarial medicine. The minimum, median and maximum describe the range of treatment failures observed in the studies for each antimalarial medicine.

III. Financing

Sources of financing: The data shown are those reported by NMCPs. The government contribution is usually the declared government expenditure for the year. In cases where government expenditure was not reported by the programme, the government budget was used. External contributions are those allocated to the programme by external agencies; however, such contributions may or may not be disbursed. Additional information about contributions from specific donor agencies, as reported by these agencies, is given in Annex 3. All countries were asked to convert their local currencies to US$ for reporting on sources of financing.

Expenditure by intervention in 2014: The pie chart shows the proportion of malaria funding from all sources that was spent on ITNs, insecticides and spraying materials, IRS, diagnosis, antimalarial medicines, monitoring and evaluation, human resources, technical assistance and management. There are differences in the completeness of data between countries, and the activities for which expenditures are reported do not necessarily include all items of expenditure. For example, government expenditures usually only include expenditures specific to malaria control, and do not take into account costs related to health-facility staff, infrastructure and so on.

IV. Coverage

ITN and IRS coverage: Indicators are shown according to data availability:

a) With access to an ITN (survey) – the proportion of all individuals that could be covered by available ITNs in each household, assuming each ITN can be shared by two people. The indicator is calculated from nationally representative household surveys such as DHS, MICS and MIS.

b) All ages who slept under an ITN (survey) – the proportion of all individuals who spent the previous night in surveyed households who slept under an ITN, as measured in a nationally representative household survey such as DHS, MICS or MIS.

c) With access to an ITN (model) – for high-transmission countries in the WHO African Region, a model was used to estimate the proportion of the population with access to an ITN within their household for years in which household survey results were not available. The methods used to estimate the indicator were the same as those described for Figure 3.1 and Figure 3.2.

d) At high risk protected by ITNs – for countries in WHO regions other than the African Region, nationally representative household surveys are not undertaken sufficiently frequently to allow an assessment of levels and trends in ITN coverage. Therefore, the number of ITNs distributed by NMCPs is used. The proportion of the population potentially protected with ITNs is calculated as 1.8 × (number of LLINs distributed in the past 3 years + number of conventional ITNs distributed or re-treated in the past year) divided by the population at high risk for malaria. LLINs are considered to have an average useful lifespan of 3 years and conventional ITNs 1 year; also, each net is assumed to protect two people. The ratio of 1.8 is used in the formula to allow for only one person sleeping under some ITNs in households with an odd number of inhabitants. The population at high risk is used as the denominator because it is assumed that populations at high risk will be preferentially targeted to receive an ITN. For countries in the elimination phase, those residing in foci are considered to be the population at risk.

e) At high risk protected by IRS – calculated as the number of people living in a household where IRS has been applied during the preceding 12 months, divided by the population at risk (the sum of populations living in low- and high-transmission areas). For areas outside Africa, the population at high risk is used as the denominator. The percentage of people protected by IRS is a measure of the extent to which IRS is implemented and the extent to which the population at risk benefits from IRS nationwide. The data show neither the quality of spraying nor the geographical distribution of IRS coverage in a country.

Cases tested and cases treated in the public sector

Suspected cases tested – the number of suspected cases examined by microscopy or by RDT, divided by the total number of suspected malaria cases. For countries that do not report the number of suspected cases independently, the number of suspected malaria cases is derived from the number of presumed and confirmed cases, the number tested and the number of positive tests. This indicator reflects the extent to which a programme can provide diagnostic services to patients attending public health facilities. It does not consider patients attending privately run health facilities, and therefore does not reflect the experience of all patients seeking treatment. In many situations, health facilities in the private sector are less likely to provide a diagnostic test than those in the public sector. The indicator may also be biased if those health facilities that provide a diagnostic test (e.g. hospitals) are more likely than other facilities to submit monthly reports.

Under 5 with fever with finger/heel stick (survey) – the proportion of children aged under 5 years with fever in the past weeks who had a finger or heel stick, as measured in a nationally representative household survey such as DHS, MICS or MIS.

Antimalarial medicines distributed versus cases – few countries have information systems that are able to record the treatments given to individual patients. Instead, data on the numbers of antimalarial medicines distributed by the country's ministry of health are used to calculate proxy indicators of access to treatment. Three indicators are shown:

a) Antimalarials distributed versus all malaria cases – the number of first-line treatment courses distributed, divided by the estimated number of malaria cases attending public sector health facilities.

b) ACTs distributed versus *P. falciparum* malaria cases – the number of ACT treatment courses distributed, divided by the estimated number of *P. falciparum* malaria cases attending public sector health facilities.

c) Primaquine distributed versus *P. vivax* malaria cases – the number of primaquine treatment courses distributed, divided by the estimated number of *P. vivax* malaria cases attending public sector health facilities. For high-transmission countries in the WHO African Region, the estimated number of malaria cases attending public sector health facilities is used as a denominator. For other countries, the denominator is the number of confirmed cases plus the number of presumed cases, adjusted for reporting completeness. These indicators can provide information on whether the NMCP delivers sufficient antimalarial medicines to treat all malaria patients who seek treatment in the public sector. It is not a direct measure of the proportion of patients with malaria that have received treatment.

ACTs as a percentage of all antimalarials received (survey) – children aged under 5 years with fever in the past 2 weeks who received ACTs as a proportion of children aged under 5 years with fever who received any antimalarial.

Cases tracked

Reporting completeness – calculated as the total number of health-facility reports received by a ministry of health during a year, divided by the total number of facility reports that were expected in that year. The expected number of facility reports is the number of health facilities multiplied by the frequency of reporting; that is, if 100 facilities are expected to report each month, 1200 reports would be expected during a year.

Percentage fever cases <5 seeking treatment at public health facility (survey) – the proportion of children aged under 5 years with fever in the past 2 weeks who sought treatment at a public health facility, derived from a nationally representative household survey such as DHS, MICS or MIS (for programmes in the control phase only).

Cases investigated – the proportion of reported confirmed malaria cases that are investigated for additional information on the characteristics of the case; most importantly, whether the case was imported or locally acquired (for programmes in the pre-elimination and elimination phase only).

Foci investigated – the proportion of foci of malaria transmission that are investigated for additional information on the characteristics of transmission of malaria, including evidence of local malaria transmission and entomological information such as vector breeding sites within the transmission focus (for programmes in the pre-elimination and elimination phase only).

V. Impact

Test positivity slide positivity rate (SPR) – the number of microscopically positive cases divided by the total number of slides examined.

RDT positivity rate – the number of positive RDT tests divided by the total number of RDT tests carried out. The RDT positivity rate and SPR are derived from the number of parasitologically positive cases per 100 cases examined by RDT or microscopy. They measure the prevalence of malaria parasites among people who seek care and are examined in health facilities. Trends in these indicators may be less distorted by variations in the ABER than by trends in the number of confirmed cases.

Parasite prevalence (survey) – the proportion of people tested for malaria parasites in a survey (usually children aged under 5 years) who have malaria parasites (programmes in control phase only).

Confirmed malaria cases per 1000 and ABER (microscopy and RDT) – the number of parasitological tests (by microscopy or RDT) undertaken per 100 population at risk per year. The numbers of parasitological tests were derived from reports by NMCPs to WHO. The ABER provides information on the extent of diagnostic testing in a population. It can be useful to take ABER into account when interpreting trends in confirmed cases. To discern changes in malaria incidence, the ABER should ideally remain constant (see the methods notes for Table 2.4). There is no set threshold or target for ABER; rather, it is the trend in ABER in relation to reported case incidence that is most informative.

Cases (all species) – the total number of confirmed malaria cases (by microscopy or RDT) divided by the population at risk. The numbers of confirmed cases were derived from reports by NMCPs to WHO. The indicator is useful in assessing changes in the incidence of malaria over time, provided that there has been consistency in patient attendance at facilities, diagnostic testing and case reporting over time.

Cases *(P. vivax)* – the total number of confirmed *P. vivax* malaria cases (by microscopy or RDT) divided by the population at risk. The numbers of confirmed *P. vivax* cases were derived from reports by NMCPs to WHO (the numbers exclude mixed infections). For countries in the pre-elimination or elimination phases, the total number of indigenous cases (acquired within the country) and imported cases were also plotted.

Malaria admissions and deaths (for countries in the control phase) – numbers for malaria admissions and deaths for countries in the control phase were derived from reports by NMCPs to WHO.

Admissions (all species) – the number of patients admitted for malaria with malaria as the primary discharge diagnosis, divided by the population at risk.

Admissions *(P. vivax)* – the number of patients admitted for malaria with *P. vivax* malaria as the primary discharge diagnosis, divided by the population at risk.

Deaths (all species) – the number of patients dying in health facilities with malaria as the primary cause of death, divided by the population at risk.

Deaths *(P. vivax)* – the number of patients dying in health facilities with *P. vivax* malaria as the primary cause of death, divided by the population at risk.

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Annex 2A – Recommended policies and strategies for malaria control, 2014

WHO region	Country/area	Programme phase	Insecticide-treated mosquito nets			Indoor residual spraying		Treatment									Malaria in pregnancy	
			ITNs/ LLINs are distributed for free	ITNs/ LLINs are distributed to all age groups	ITNs/ LLINs distributed through mass campaigns to all age groups	IRS is recommended by malaria control programme	DDT is used for IRS	ACT policy adopted	Patients of all ages should get diagnostic test	Malaria diagnosis is free of charge in the public sector	RDTs used at community level	Pre-referral treatment with quinine or artemether IM or artesunate suppositories	Single dose of primaquine is used as gametocidal medicine for *P. falciparum*[1]	Primaquine is used for radical treatment of *P. vivax* cases	G6PD test is recommended before treatment with primaquine	Directly observed treatment with primaquine is undertaken	IPTp used to prevent malaria during pregnancy	Seasonal malaria chemoprevention (SMC or IPTc) is used
African	Algeria	Elimination	N	N	–	Y	N	NA	–	Y	–	–	Y	Y	N	Y	–	–
	Angola	Control	Y	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y	N	Y	N
	Benin	Control	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	N	–	N	Y	N
	Botswana	Control	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	–	N	N	–	–
	Burkina Faso	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Burundi	Control	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	–	N	N	N	N
	Cabo Verde	Pre-elimination	N	N	N	Y	N	Y	Y	Y	Y	N	Y	N	N	Y	N	–
	Cameroon	Control	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	N	–	–	Y	N
	Central African Republic	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	Y	N
	Chad	Control	Y	N	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	Y
	Comoros	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Congo	Control	Y	Y	N	Y	N	Y	Y	N	N	Y	N	N	N	N	Y	Y
	Côte d'Ivoire	Control	Y	N	Y	N	N	Y	Y	Y	Y	Y	N	–	–	–	Y	–
	Democratic Republic of the Congo	Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N
	Equatorial Guinea	Control	Y	N	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	–	N
	Eritrea	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	N	N	N	N
	Ethiopia	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	N
	Gabon	Control	N	Y	Y	Y	N	Y	Y	N	Y	Y	N	N	N	N	Y	N
	Gambia	Control	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	–	–	–	–	Y	Y
	Ghana	Control	Y	Y	Y	Y	N	Y	Y	N	Y	Y	N	N	N	N	Y	N
	Guinea	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	Y	Y
	Guinea-Bissau	Control	Y	N	Y	N	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Kenya	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	–	–	–	Y	N
	Liberia	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	Y	N
	Madagascar	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N
	Malawi	Control	Y	Y	Y	Y	N	Y	Y	N	N	Y	N	N	N	N	Y	N
	Mali	Control	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	N	–	N	Y	Y
	Mauritania	Control	Y	N	–	N	N	Y	Y	Y	Y	Y	N	Y	Y	N	Y	N
	Mayotte, France	Elimination	Y	Y	–	–	N	–	–	Y	–	–	N	Y	Y	Y	–	–
	Mozambique	Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	–	N	N	Y	N
	Namibia	Control	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	N
	Niger	Control	Y	N	N	Y	N	Y	Y	Y	N	Y	N	N	–	N	Y	Y
	Nigeria	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Rwanda	Control	Y	Y	Y	Y	N	Y	Y	N	Y	Y	N	N	N	N	N	N
	Sao Tome and Principe	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	N
	Senegal	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	Y	Y
	Sierra Leone	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	Y	N
	South Africa	Control	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N
	South Sudan[2]	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Swaziland	Pre-elimination	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N
	Togo	Control	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	N	–	–	Y	Y

WHO region	Country/area	Programme phase	Insecticide-treated mosquito nets			Indoor residual spraying		Treatment									Malaria in pregnancy	
			ITNs/ LLINs are distributed for free	ITNs/ LLINs are distributed to all age groups	ITNs/ LLINs distributed through mass campaigns to all age groups	IRS is recommended by malaria control programme	DDT is used for IRS	ACT policy adopted	Patients of all ages should get diagnostic test	Malaria diagnosis is free of charge in the public sector	RDTs used at community level	Pre-referral treatment with quinine or artemether IM or artesunate suppositories	Single dose of primaquine is used as gametocidal medicine for *P. falciparum*[1]	Primaquine is used for radical treatment of *P. vivax* cases	G6PD test is recommended before treatment with primaquine	Directly observed treatment with primaquine is undertaken	IPTp used to prevent malaria during pregnancy	Seasonal malaria chemoprevention (SMC or IPTc) is used
African	Uganda	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	Y	N
	United Republic of Tanzania	Control	Y	–	–	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Mainland	Control	Y	N	N	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Zanzibar	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	N
	Zambia	Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N
	Zimbabwe	Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N
Eastern Mediterranean	Afghanistan	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	NA
	Djibouti	Control	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	N	N	N
	Iran (Islamic Republic of)	Elimination	Y	Y	Y	Y	N	Y	Y	Y	–	–	Y	Y	N	Y	NA	NA
	Pakistan	Control	Y	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	Y	N	NA	NA
	Saudi Arabia	Elimination	Y	Y	–	Y	N	Y	Y	Y	–	–	Y	Y	Y	N	NA	NA
	Somalia	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	N	N
	Sudan	Control	Y	Y	Y	Y	N	Y	Y	N	Y	Y	N	Y	N	N	N	N
	Yemen	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	NA	NA
European	Azerbaijan	Elimination	Y	N	–	Y	N	NA	Y	Y	–	–	N	Y	N	Y	NA	NA
	Kyrgyzstan	Prevention of re-introduction	Y	Y	–	Y	N	–	Y	Y	–	–	N	Y	N	Y	NA	NA
	Tajikistan	Elimination	Y	Y	–	Y	N	Y	Y	Y	–	–	Y	Y	Y	Y	NA	NA
	Turkey	Elimination	N	N	–	Y	N	NA	Y	Y	–	–	N	Y	N	Y	NA	NA
	Uzbekistan	Prevention of re-introduction	Y	Y	–	Y	N	–	Y	Y	–	–	N	Y	N	Y	NA	NA
Region of the Americas	Argentina	Elimination	N	N	N	Y	N	NA	Y	Y	N	–	Y	Y	N	Y	NA	NA
	Belize	Pre-elimination	Y	Y	Y	Y	N	NA	Y	Y	N	N	Y	Y	N	Y	NA	NA
	Bolivia (Plurinational State of)	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	N	NA	NA
	Brazil	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	NA	NA
	Colombia	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	N	N	NA	NA
	Costa Rica	Elimination	Y	Y	Y	Y	N	NA	Y	Y	N	N	Y	Y	N	Y	NA	NA
	Dominican Republic	Pre-elimination	Y	Y	N	Y	N	NA	Y	Y	N	N	Y	Y	N	Y	NA	NA
	Ecuador	Pre-elimination	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	NA	NA
	El Salvador	Pre-elimination	Y	N	N	Y	N	NA	Y	Y	N	N	Y	Y	N	Y	NA	NA
	French Guiana, France	Control	Y	Y	Y	Y	N	NA	Y	N	N	N	N	Y	Y	N	NA	NA
	Guatemala	Control	Y	Y	Y	Y	N	NA	Y	Y	Y	N	Y	Y	N	N	NA	NA
	Guyana	Control	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	Y	NA	NA
	Haiti	Control	Y	Y	Y	N	N	NA	Y	Y	N	N	Y	N	N	N	NA	NA
	Honduras	Control	Y	Y	Y	Y	N	NA	Y	Y	N	N	Y	Y	N	N	NA	NA
	Mexico	Pre-elimination	Y	Y	Y	N	N	NA	Y	Y	N	N	Y	Y	N	Y	NA	NA
	Nicaragua	Control	Y	Y	Y	Y	N	NA	Y	Y	Y	N	Y	Y	N	Y	NA	NA
	Panama	Control	Y	N	N	Y	N	NA	Y	Y	N	N	Y	Y	N	N	NA	NA
	Paraguay	Elimination	N	N	N	Y	N	Y	Y	Y	N	N	Y	Y	N	Y	NA	NA
	Peru	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	NA	NA
	Suriname	Control	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	NA	NA
	Venezuela (Bolivarian Republic of)	Control	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	Y	NA	NA

WHO region	Country/area	Programme phase	Insecticide-treated mosquito nets			Indoor residual spraying		Treatment									Malaria in pregnancy	
			ITNs/ LLINs are distributed for free	ITNs/ LLINs are distributed to all age groups	ITNs/ LLINs distributed through mass campaigns to all age groups	IRS is recommended by malaria control programme	DDT is used for IRS	ACT policy adopted	Patients of all ages should get diagnostic test	Malaria diagnosis is free of charge in the public sector	RDTs used at community level	Pre-referral treatment with quinine or artemether IM or artesunate suppositories	Single dose of primaquine is used as gametocidal medicine for *P. falciparum*[1]	Primaquine is used for radical treatment of *P. vivax* cases	G6PD test is recommended before treatment with primaquine	Directly observed treatment with primaquine is undertaken	IPTp used to prevent malaria during pregnancy	Seasonal malaria chemoprevention (SMC or IPTc) is used
South-East Asia	Bangladesh	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	NA	NA
	Bhutan	Pre-elimination	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	N	NA	NA
	Democratic People's Republic of Korea	Pre-elimination	Y	Y	Y	Y	N	NA	Y	Y	-	-	N	Y	N	Y	NA	NA
	India	Control	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	NA	NA
	Indonesia	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	NA	NA
	Myanmar	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	NA	NA
	Nepal	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	-	-	Y	Y	N	NA	NA
	Sri Lanka	Prevention of re-introduction	Y	Y	-	Y	N	Y	Y	Y	-	-	Y	Y	Y	Y	NA	NA
	Thailand	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	NA	NA
	Timor-Leste	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	N	N	NA	NA
Western Pacific	Cambodia	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y	N	NA	NA
	China	Elimination	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	Y	N	Y	NA	NA
	Lao People's Democratic Republic	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y	N	NA	NA
	Malaysia	Pre-elimination	Y	Y	-	-	N	Y	Y	Y	-	-	Y	Y	Y	Y	NA	NA
	Papua New Guinea	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	Y	N	N	Y	N
	Philippines	Control	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	NA
	Republic of Korea	Elimination	Y	Y	-	-	N	NA	Y	Y	-	-	N	Y	N	N	NA	NA
	Solomon Islands	Control	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y	N	NA	NA
	Vanuatu	Control	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	NA	NA
	Viet Nam	Control	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	NA	NA

ACT, artemisinin-based combination therapy; DDT, dichloro-diphenyl-trichloroethane; G6PD, glucose-6-phosphate dehydrogenase; IM, intramuscular; IPTp, intermittent preventive treatment in pregnancy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net; LLIN, long-lasting insecticidal net; NMCP, National malaria control programme; RDT, rapid diagnostic test; SMC, seasonal malaria chemoprevention

(Y) = Actually implemented.
(N) = Not implemented.
(-) = Question not answered or not applicable.
1 Single dose of primaquine (0.75mg base/kg) for countries in the Region of the Americas
2 In May 2013 South Sudan was reassigned to the WHO African Region (WHA resolution 66.21, http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R21-en.pdf)

Annex 2B – Antimalarial drug policy, 2014

WHO region	Country/area	*P. falciparum*				*P. vivax*
		Uncomplicated unconfirmed	Uncomplicated confirmed	Severe	Prevention during pregnancy	Treatment
African	Algeria	-	-	-	-	CQ
	Angola	AL	AL	AS; QN	SP(IPT)	-
	Benin	AL	AL	AS; QN	SP(IPT)	-
	Botswana	AL	AL	QN	CQ+PG	-
	Burkina Faso	AL; AS+AQ	AL; AS+AQ	AS; QN	SP(IPT)	-
	Burundi	AS+AQ	AS+AQ	AS; QN	-	-
	Cabo Verde	AL	AL	QN	CQ	-
	Cameroon	AS+AQ	AS+AQ	AS	-	-
	Central African Republic	AL	AL	AS	-	-
	Chad	AL; AS+AQ	AL; AS+AQ	AS	-	-
	Comoros	AL	AL	QN	SP(IPT)	-
	Congo	AS+AQ	AS+AQ	QN	SP(IPT)	-
	Côte d'Ivoire	AS+AQ	AS+AQ	QN	SP(IPT)	-
	Democratic Republic of the Congo	AS+AQ	AS+AQ	AS	-	-
	Equatorial Guinea	AS+AQ	AS+AQ	AS	-	-
	Eritrea	AS+AQ	AS+AQ	QN	-	AS+AQ+PQ
	Ethiopia	AL	AL	AS; AM; QN	-	CQ
	Gabon	AS+AQ	AS+AQ	AS; AM; QN	SP(IPT)	-
	Gambia	AL	AL	QN	SP(IPT)	-
	Ghana	AS+AQ	AL; AS+AQ	AS; AM; QN	SP(IPT)	-
	Guinea	AS+AQ	AS+AQ	AS	SP(IPT)	-
	Guinea-Bissau	AL	AL	AS;QN	SP(IPT)	-
	Kenya	AL	AL	AS; AM; QN	SP(IPT)	-
	Liberia	AS+AQ	AS+AQ	AS; AM; QN	SP(IPT)	-
	Madagascar	AS+AQ	AS+AQ	QN	SP(IPT)	-
	Malawi	AL	AL	AS; QN	SP(IPT)	-
	Mali	AS+AQ	AL; AS+AQ	QN	SP(IPT)	-
	Mauritania	AS+AQ	AL; AS+AQ	QN	-	-
	Mayotte, France	-	AL	QN; AS; QN+AS; AS+D; QN+D	-	CQ+PQ
	Mozambique	AL	AL	AS	-	-
	Namibia	AL	AL	QN	SP(IPT)	AL
	Niger	AL	AL	AS; QN	SP(IPT)	-
	Nigeria	AL; AS+AQ	AL; AS+AQ	AS; AM; QN	SP(IPT)	-
	Rwanda	AL	AL	AS; QN	SP(IPT)	-
	Sao Tome and Principe	AS+AQ	AS+AQ	QN	SP(IPT)	-
	Senegal	AS+AQ	AL; AS+AQ	AS; QN	SP(IPT)	-
	Sierra Leone	AS+AQ	AL; AS+AQ	AS; AM; QN	SP(IPT)	-
	South Africa	-	AL; QN+CL; QN+D	QN	CQ+PG	AL+PQ; CQ+PQ
	South Sudan[1]	AS+AQ	AS+AQ	AM; AS; QN	SP(IPT)	AS+AQ+PQ
	Swaziland	-	AL	AS	CQ+PG	-
	Togo	AL; AS+AQ	AL; AS+AQ	AS; AM; QN	SP(IPT)	-
	Uganda	AL	AL	AS	-	-
	United Republic of Tanzania	AL; AS+AQ	AL; AS+AQ	AS	-	-
	Mainland	AL	AL	AS	-	-
	Zanzibar	AS+AQ	AS+AQ	AS; QN	SP(IPT)	-
	Zambia	AL	AL	AS; AM; QN	SP(IPT)	-
	Zimbabwe	AL	AL	QN	SP(IPT)	-
Eastern Mediterranean	Afghanistan	CQ	AS+SP+PQ	AM;AS;QN	-	CQ+PQ(8w)
	Djibouti	AL	AL+PQ	QN	-	CQ+PQ (14 d)
	Iran (Islamic Republic of)	-	AS+SP; AS+SP+PQ	AS; QN+D	-	CQ+PQ(14d & 8w)
	Pakistan	CQ	AS+SP+PQ	AS; QN	-	CQ+PQ(14d)
	Saudi Arabia	-	AS+SP+PQ	AS; AM; QN	-	CQ+PQ(14d)
	Somalia	AS+SP	AS+SP	AS; QN	-	-
	Sudan	AS+SP	AS+SP	AM; QN	-	AL+PQ(14d)
	Yemen	AS+SP	AS+SP	AM; QN	-	CQ+PQ(14d)

WHO region	Country/area	*P. falciparum*				*P. vivax*
		Uncomplicated unconfirmed	Uncomplicated confirmed	Severe	Prevention during pregnancy	Treatment
European	Azerbaijan	AS+SP	AS+SP	AS; QN	-	CQ+PQ(14d)
	Kyrgyzstan	-	-	-	-	CQ+PQ(14d)
	Tajikistan	-	AL	QN	-	CQ+PQ(14d)
	Turkey	-	-	-	-	CQ+PQ(14d)
	Uzbekistan	-	-	-	-	CQ+PQ(14d)
Region of the Americas	Argentina	-	AL+PQ	-	-	CQ+PQ
	Belize	-	CQ+PQ (1d)	AL; QN	-	CQ+PQ(14d)
	Bolivia (Plurinational State of)	-	AS+MQ+PQ	QN	-	CQ+PQ(7d)
	Brazil	-	AL+PQ(1d); AS+MQ+PQ(1d)	AM+CL; AS+CL; QN+CL	-	CQ+PQ(7d)
	Colombia	-	AL	AS+AL	-	CQ+PQ(14d)
	Costa Rica	-	CQ+PQ(1d)	QN	-	CQ+PQ(7d);CQ+PQ(14d)
	Dominican Republic	-	CQ+PQ(1d)	CQ; QN	-	CQ+PQ(14d)
	Ecuador	-	AL+PQ	QN	-	CQ+PQ(14d)
	El Salvador	-	CQ+PQ(1d)	QN	-	CQ+PQ(14d)
	French Guiana, France	-	AL	AS; AL	-	CQ+PQ
	Guatemala	-	CQ+PQ(3d)	QN	-	CQ+PQ(14d)
	Guyana	-	AL+PQ(1d)	AM	-	CQ+PQ(14d)
	Haiti	-	CQ+PQ(1d)	QN	-	CQ+PQ(14d)
	Honduras	-	CQ+PQ(1d)	QN	-	CQ+PQ(14d)
	Mexico	-	CQ+PQ	AL	-	CQ+PQ
	Nicaragua	-	CQ+PQ(1d)	QN	-	CQ+PQ(7d)
	Panama	-	AL+PQ(1d)	QN	-	CQ+PQ(7d); CQ+PQ(14d)
	Paraguay	-	AL+PQ	AS	-	CQ+PQ
	Peru	-	AS+MQ	AS+MQ	-	CQ+PQ
	Suriname	-	AL+PQ	AS	-	CQ+PQ(14d)
	Venezuela (Bolivarian Republic of)	-	AS+MQ+PQ	AM; QN	-	CQ+PQ(14d)
South-East Asia	Bangladesh	-	AL	AM; QN	-	CQ+PQ(14d)
	Bhutan	-	AL	AM; QN	-	CQ+PQ(14d)
	Democratic People's Republic of Korea	-	-	-	-	CQ+PQ(14d)
	India	CQ	AS+SP+PQ	AM; AS; QN	-	CQ+PQ(14d)
	Indonesia	-	AS+AQ; DHA-PP+PQ	AM; AS; QN	-	AS+AQ; DHA-PP+PQ(14d)
	Myanmar	-	AL; AM; AS+MQ; DHA-PPQ; PQ	AM; AS; QN	-	CQ+PQ(14d)
	Nepal	CQ	AL+PQ	AS; QN	-	CQ+PQ(14d)
	Sri Lanka	-	AL+PQ	AS	-	CQ+PQ(14d)
	Thailand	-	AS+MQ	QN+D	-	CQ+PQ(14d)
	Timor-Leste	-	AL	AM; AS; QN	-	CQ+PQ(14d)
Western Pacific	Cambodia	-	AS+MQ; DHA-PPQ+PQ	AM; AS; QN	-	DHA-PPQ
	China	-	ART+NQ; ART-PPQ; AS+AQ; DHA-PPQ	AM; AS; PYR	-	CQ+PQ(8d)
	Lao People's Democratic Republic	-	AL	AS+AL	SP(IPT)	CQ+PQ(14d)
	Malaysia	-	AS+MQ	QN+T	-	CQ+PQ(14d)
	Papua New Guinea	-	AL	AM; AS	SP(IPT)	AL+PQ
	Philippines	AL	AL+PQ	QN+T; QN+D; QN+CL	SP(IPT)	CQ+PQ(14d)
	Republic of Korea	CQ	-	-	-	CQ+PQ(14d)
	Solomon Islands	AL	AL	AL; AS	CQ	AL+PQ(14d)
	Vanuatu	-	AL	AS	CQ(weekly)	AL+PQ(14d)
	Viet Nam	DHA-PPQ	DHA-PPQ	AS; QN	-	CQ+PQ(14d)

AL=Artemether-lumefantrine
AM=Artemether
AQ=Amodiaquine
ART=Artemisinin

AS=Artesunate
AT= Atovaquone
CL=Clindamycline
CQ=Chloroquine

D=Doxycycline
DHA=Dihydroartemisinin
MQ=Mefloquine
NQ=Naphroquine

PG=Proguanil
PPQ=Piperaquine
PQ=Primaquine
PYR=Pyronaridine

QN=Quinine
SP=Sulphadoxine-pyrimethamine
T=Tetracycline

1 In May 2013 South Sudan was reassigned to the WHO African Region (WHA resolution 66.21, http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R21-en.pdf)

Annex 3 – Funding for malaria control, 2012–2014

WHO Region	Country/area	Year	Contributions reported by donors				Contributions reported by countries							
			Global Fund[1]	PMI/ USAID[2]	The World Bank[3]	UK[4]	Government	Global Fund	The World Bank	PMI/ USAID	Other bilaterals	WHO	UNICEF	Other contributions[6]
African	Algeria	2012	–	–	–	–	98 151 555	0	–	–	0	33 000	–	0
		2013	–	–	–	–	0[5]	–	–	–	–	–	–	0
		2014	–	–	–	–	1 705 134	0	–	–	–	12 000	–	0
	Angola	2012	7 070 600	30 750 000	–	–	57 415 819[5]	2 135 717	–	30 750 000	–	–	–	1 000 000
		2013	25 215 799	28 548 000	–	–	64 047 348[5]	19 286 339	–	27 200 000	–	–	3 555 239	–
		2014	-249 158*	29 000 000	–	–	27 851 717	–	–	27 000 000	–	–	–	–
	Benin	2012	5 848 553	18 500 000	33 200	–	1 072 280	9 011 888	–	16 100 000	–	660 000	123 571	–
		2013	27 645 452	16 653 000	–	–	980 000	–	–	–	–	–	–	–
		2014	13 105 187	16 500 000	–	–	1 082 000	40 580 540	–	–	–	–	–	–
	Botswana	2012	–	–	–	–	1 921 908	–	–	–	–	–	–	250 000
		2013	–	–	0	–	1 947 775	0	0	0	0	–	0	0
		2014	–	–	–	–	2 142 552	0	0	0	0	–	0	0
	Burkina Faso	2012	40 321 989	9 000 000	1 981 243	–	11 380 472	4 834 000	0	2 698 000	16 600	29 500	14 000	0
		2013	9 399 940	9 421 000	4 254 781	281 893	58 920 267	40 645 351	0	8 552 723	0	37 800	521 760	942 955
		2014	5 963 608	9 500 000	–	–	3 126 963	2 433 376	697 173	8 571 017	70 804	19 048	136 540	379 610
	Burundi	2012	1 018 766	8 000 000	–	–	1 279 206	4 382 754	–	8 000 000	1 031 803	94 294	150 502	2 602 730
		2013	22 752 851	9 229 000	–	–	1 134 923	19 481 377	–	9 260 000	2 602 730	65 000	453 631	1 277 376
		2014	4 774 243	9 500 000	–	–	2 001 113	6 027 330	–	9 229 345	0	79 050	475 936	1 324 385
	Cabo Verde	2012	373 386	–	–	–	481 264[5]	–	–	–	–	–	–	–
		2013	892 644	–	–	–	397 920	555 169	–	–	–	130 448	–	–
		2014	–	–	–	–	253 251	64 285	–	–	–	19 638	–	–
	Cameroon	2012	1 632 342	–	–	–	3 178 626[5]	11 655 745	0	0	0	449 000	1 196 800	0
		2013	10 878 702	–	–	–	5 246 883[5]	15 293 706	–	–	5 415 537	904 218	118 341	5 415 537
		2014	8 613 320	–	–	–	43 709 021[5]	147 856 497	–	1 123 490	–	460 000	14 718	669 000
	Central African Republic	2012	3 836 072	–	–	–	371 463[5]	–	0	0	74 535	–	219 747	0
		2013	12 276 042	–	–	–	160 000	5 342 710	0	0	–	–	2 000 000	–
		2014	1 991 913	–	–	–	530 000[5]	2 852 385	–	–	–	20 500	5 596 000	–
	Chad	2012	–	–	–	–	–	–	–	–	–	–	–	–
		2013	34 674 177	–	–	–	7 493 400[5]	–	–	–	–	–	–	–
		2014	12 587 947	–	–	–	9 122 400[5]	30 125 205	–	–	239 735	54 574	2 667 358	673 440
	Comoros	2012	137 122	–	0	–	225 621[5]	–	0	0	0	20 000	–	0
		2013	3 541 013	–	–	–	137 147	499 000	0	0	0	40 000	5 576	0
		2014	1 107 319	–	–	–	94 797	1 074 877	0	0	0	104 000	51 630	58 500
	Congo	2012	1 142 527	–	–	–	6 956 815[5]	4 740 367	–	–	–	–	–	–
		2013	735 866	–	–	–	0	0	0	0	0	45 000	10 000	0
		2014	–	–	–	–	7 240 000[5]	–	–	–	–	45 000	–	3 827
	Côte d'Ivoire	2012	18 895 269	–	–	–	206 925 986[5]	–	13 119 140	19 678 710	336 278	14 466 750	–	–
		2013	45 346 542	–	–	–	54 723 090	74 853 096	13 119 140	9 839 355	244 000	36 338	24 975 817	244 000
		2014	27 496 568	–	–	–	53 942 249	33 611 939	–	9 839 355	–	6 245 966	29 250 235	–
	Democratic Republic of the Congo	2012	105 080 153	38 000 000	8 457 772	4 751 190	303 835	64 140 129	73 719 913	34 930 000	45 000	520 000	5 584 965	12 575 325
		2013	58 206 877	41 869 000	11 238 171	13 731 500	7 812 690	86 281 277	2 952 042	37 001 000	0	0	1 790 452	35 020 370
		2014	78 117 103	50 000 000	–	–	8 104 841	102 540 781	0	34 000 000	24 838 023	2 100 000	7 196 262	0
	Equatorial Guinea	2012	-307 864*	–	–	–	2 659 791[5]	–	–	–	–	–	–	5 319 581
		2013	–	–	–	–	2 582 747[5]	0	–	–	–	–	–	4 490 030
		2014	-138 121*	–	–	–	–	–	–	–	–	–	–	–
	Eritrea	2012	8 229 050	–	–	–	–	11 157 713	0	0	–	0	0	0
		2013	14 460 101	–	–	–	–	15 871 769	–	–	–	–	–	–
		2014	6 797 703	–	–	–	0	4 906 745	0	0	–	58 832	0	0
	Ethiopia	2012	23 762 673	43 000 000	–	–	–	42 424 919	–	–	–	0	–	–
		2013	113 143 096	43 773 000	–	–	19 705 028	85 723 876	–	29 370 000	–	111 677	–	15 000 000
		2014	9 890 472	45 000 000	–	–	–	93 201 479	–	–	–	–	–	–
	Gabon	2012	-275 821*	–	–	–	–	–	–	–	–	–	–	–
		2013	-118*	–	–	–	226 596	0	0	0	0	11 276	0	–
		2014	-154 828*	–	–	–	123 200	–	–	–	–	34 855	–	–

WHO Region	Country/area	Year	Contributions reported by donors				Contributions reported by countries							
			Global Fund[1]	PMI/ USAID[2]	The World Bank[3]	UK[4]	Government	Global Fund	The World Bank	PMI/ USAID	Other bilaterals	WHO	UNICEF	Other contributions[6]
African	Gambia	2012	5 393 233	–	–	–	597 812	4 107 095	–	–	119 149	134 306	–	119 149
		2013	9 288 845	–	–	2 982 020	726 578	4 919 685	0	0	0	16 000	26 229	100 000
		2014	4 134 951	–	–	–	799 091	5 934 320	–	–	–	132 833	150 000	120 814
	Ghana	2012	24 589 072	32 000 000	3 484 590	2 006 310	7 700 154	34 668 998	0	27 010 000	581	200 000	79 490	7 911 545
		2013	67 802 357	28 547 000	1 903 200	145 948	8 736 726	67 804 357	0	27 000 000	38 817	47 050	0	–
		2014	14 840 935	28 000 000	–	–	8 855 177	64 952 156	–	4 730 000	825 000	32 514	7 519	6 429
	Guinea	2012	20 112 537	10 000 000	–	–	50 880	1 705 505	–	10 000 000	–	41 060	15 736	6 773 166
		2013	4 603 535	12 371 000	–	–	3 015 335	–	–	10 000 000	–	–	–	–
		2014	9 144 353	12 500 000	–	–	956 833	15 603 972	–	12 052 476	–	105 114	36 639	16 581
	Guinea-Bissau	2012	268 512	–	–	–	–	18 177	0	0	0	124 135	436 945	0
		2013	7 320 497	–	–	–	0	701 363	0	0	–	73 734	218 811	–
		2014	2 340 811	–	–	–	100 000[5]	2 952 761	0	0	0	16 869	7 231	0
	Kenya	2012	10 881 645	36 450 000	–	17 515 900	2 635 294	9 353 875	8 790 698	35 604 651	232 558	–	337 209	13 111 111
		2013	33 311 280	34 256 000	–	22 345 400	1 372 093	29 089 771	1 127 907	32 400 000	23 457 627	–	0	23 457 627
		2014	49 541 177	35 000 000	–	–	1 178 804	48 916 476	–	32 400 000	25 635 413	832 402	–	–
	Liberia	2012	12 187 274	12 000 000	–	–	0[5]	14 243 081	0	12 000 000	500 000	73 333	0	500 000
		2013	5 882 949	12 370 000	–	–	284 306[5]	14 026 642	0	12 000 000	–	44 890	340 647	–
		2014	10 405 293	12 000 000	–	–	11 341 797	10 399 555	0	12 000 000	0	–	0	0
	Madagascar	2012	25 540 902	27 000 000	–	–	95 000	31 371 350	0	28 742 000	51 000	111 315	875 717	0
		2013	22 647 300	26 026 000	–	–	15 286	29 994 536	0	27 000 000	369 500	299 000	737 588	0
		2014	499 317	26 000 000	–	–	23 658	2 524 013	600 000	2 592 000	0	3 369 341	254 170	0
	Malawi	2012	2 473 270	24 600 000	–	–	720 000	9 720 000	–	21 600 000	3 240 000	120 000	–	720 000
		2013	9 084 196	24 075 000	–	–	–	880 267	–	23 000 000	–	150 000	–	–
		2014	7 129 260	22 000 000	–	–	–	8 023 075	–	19 118 000	–	150 000	–	–
	Mali	2012	–	27 000 000	–	–	1 259 872	0	–	5 298 930	–	52 584	–	–
		2013	13 845 815	25 007 000	–	–	1 871 915	18 180 392	0	25 500 000	0	92 000	3 092 000	0
		2014	10 803 020	25 000 000	–	–	1 756 941	26 392 018	0	25 500 000	–	–	1 437 552	–
	Mauritania	2012	-534 600*	–	–	–	170 000	0	0	0	0	–	–	0
		2013	–	–	–	264 584	1 130 593	–	–	–	–	11 767	42 583	–
		2014	–	–	–	–	2 328 000	–	–	–	–	46 000	42 000	–
	Mayotte, France	2012	–	–	–	–	–	–	–	–	–	–	–	–
		2013	–	–	–	–	–	–	–	–	–	–	–	–
		2014	–	–	–	–	–	–	–	–	–	–	–	–
	Mozambique	2012	29 682 980	30 000 000	1 880 060	–	65 800 000	–	10 500 000	–	–	250 000	–	–
		2013	12 626 612	29 023 000	2 031 197	7 739 210	65 800 000	2 497 243	11 000 000	29 000 000	–	100 000	2 668 555	–
		2014	34 642 279	29 000 000	–	–	4 186 129	37 646 902	3 500 000	29 023 096	–	–	268 993	–
	Namibia	2012	1 243 974	–	–	–	4 500 000	926 804	0	0	0	0	0	0
		2013	3 608 532	–	–	–	14 811 934	882 630	0	–	0	100 000	–	0
		2014	556 809	–	–	–	2 996 923	2 910 095	0	0	0	100 000	0	0
	Niger	2012	490 866	–	–	–	2 115 926[5]	225 901	60 000	38 000	–	16 000	816 535	0
		2013	9 305 823	–	–	–	2 668 014	19 000 000	0	0	–	27 000	4 000 000	–
		2014	24 009 643	–	–	–	2 859 000	2 494 013	0	0	0	70 248	1 249 000	44 000
	Nigeria	2012	123 123 384	60 100 000	25 335 000	12 752 900	1 740 000	83 083 666	5 492 349	48 502 012	–	285 968	1 000 000	18 908 794
		2013	45 365 287	73 272 000	27 963 280	30 852 400	5 541 401	100 362 906	7 040 569	60 462 012	36 736 654	934 980	3 000 000	–
		2014	144 939 061	75 000 000	–	–	–	137 920 815	52 220 588	73 771 000	20 157 565	861 615	1 000 000	–
	Rwanda	2012	26 012 739	18 100 000	–	–	–	–	–	–	–	–	–	–
		2013	22 881 569	18 003 000	–	–	–	–	–	–	–	–	–	–
		2014	15 427 182	17 500 000	–	–	0	0	0	0	0	0	0	0
	Sao Tome and Principe	2012	–	0	62 361	–	128 502	926 494	459 294	0	2 000	47 962	3 000	1 022 740
		2013	3 699 517	0	9 455	–	107 238	1 002 778	0	0	1 050 830	32 512	0	2 000
		2014	3 306 066	0	–	–	1 108 444	1 715 622	0	0	1 020 102	125 209	0	1 600
	Senegal	2012	22 520 214	24 500 000	–	–	–	21 567 732	–	–	–	30 117	443 356	–
		2013	3 662 132	24 124 000	–	–	213 986[5]	4 675 836	–	24 500 000	–	12 490	200 000	–
		2014	21 674 466	24 000 000	–	–	24 800	11 304 875	–	25 302 960	–	12 491	9 780	–
	Sierra Leone	2012	2 991 631	–	–	–	1 231 395[5]	11 763 088	–	–	–	430 000	2 812	–
		2013	6 214 513	–	–	6 097 560	26 898	13 216 219	1 952 807	–	–	64 000	7 874 921	112 855
		2014	13 788 079	–	–	–	3 074	13 525 631	–	0	6 156 320	50 000	17 912	2 200 067

WHO Region	Country/area	Year	Contributions reported by donors				Contributions reported by countries							
			Global Fund[1]	PMI/ USAID[2]	The World Bank[3]	UK[4]	Government	Global Fund	The World Bank	PMI/ USAID	Other bilaterals	WHO	UNICEF	Other contributions[6]
African	South Africa	2012	–	–	–	–	24 291 216	–	–	–	–	–	–	254 869
		2013	–	–	0	–	13 511 860	–	–	–	152 277	–	–	–
		2014	–	–	–	–	17 096 911	–	–	–	68 180	–	–	–
	South Sudan[7]	2012	26 978 048	6 300 000	–	–	–	38 496 269	–	9 600 000	192 057 566	2 934 000	842 791	1 300 000
		2013	8 716 372	6 947 000	–	8 955 920	0[5]	46 437 577	–	6 900 000	0	2 934 000	1 000 000	4 108 159
		2014	14 253 512	6 000 000	–	–	–	–	–	–	–	–	–	–
	Swaziland	2012	1 116 084	–	–	–	685 739	1 458 149	–	–	–	0	–	0
		2013	1 336 085	–	–	–	556 245	1 715 525	0	0	132 445	20 250	0	0
		2014	1 654 211	–	–	–	678 718	1 203 444	–	–	–	0	–	0
	Togo	2012	276 521	–	–	–	225 535	884 398	0	0	0	88 490	0	8 747
		2013	20 510 821	–	–	–	–	–	–	–	–	–	–	–
		2014	7 413 283	–	–	–	5 139 088	4 897 544	17 304	0	0	1 779	222 460	0
	Uganda	2012	83 091 440	33 000 000	–	27 083 000	–	83 701 649	–	33 000 000	–	–	–	–
		2013	19 511 505	33 782 000	–	680 702	–	20 146 401	–	33 781 000	–	–	–	–
		2014	14 223 217	34 000 000	–	–	8 035 963[5]	24 195 015	3 418 520	33 000 000	39 623 353	–	1 359 595	4 896 045
	United Republic of Tanzania[8]	2012	14 721 341	49 000 000	–	8 164 570	–	–	–	–	–	–	–	–
		2013	56 328 793	46 056 000	–	7 354 400	–	–	–	–	–	–	–	–
		2014	28 943 792	46 000 000	–	–	–	–	–	–	–	–	–	–
	Mainland	2012	15 167 601	–	–	–	553 167	18 031 872	0	165 480	0	360 000	0	0
		2013	52 221 547	–	–	–	937 500	140 356 602	0	37 117 700	0	500	0	2 487 550
		2014	28 943 792	–	–	–	6 022 000	145 506 422	0	450 000	0	500	0	0
	Zanzibar	2012	-446 260*	–	–	–	1 250	0	2 281 500	4 123 200	138 140	130 000	138 140	138 140
		2013	4 107 246	–	–	–	15 152	2 128 631	0	3 485 000	–	350	41 153	41 153
		2014	–	–	–	–	407 082	2 126 000	0	1 525 000	50 000	350	0	–
	Zambia	2012	9 069 648	25 700 000	10 454 000	4 833 820	402 975	12 105 399	3 612 027	24 000 000	1 850 000	130 000	50 000	7 161 185
		2013	29 335 147	24 028 000	4 903 770	19 235 700	185 325	19 361 732	0	24 000 000	3 500 000	204 466	27 318	0
		2014	–	24 000 000	–	–	15 462 950	24 362 218	–	24 000 000	–	–	20 000	6 000 000
	Zimbabwe	2012	21 665 148	14 000 000	–	–	906 000	19 069 239	–	12 000 000	–	0	42 000	2 000
		2013	9 985 457	15 035 000	–	–	706 200	7 460 006	–	13 000 000	–	90 060	–	–
		2014	10 695 816	15 000 000	–	–	520 000	7 626 664	–	12 000 000	–	–	42 500	–
Region of the Americas	Argentina	2012	–	–	–	–	1 082 700	0	–	–	–	–	–	–
		2013	–	–	0	–	1 082 700[5]	0	–	–	–	0	–	0
		2014	–	–	–	–	1 082 700[5]	0	–	–	–	0	–	0
	Belize	2012	–	–	–	–	250 000[5]	0	0	8 832	0	0	0	8 833
		2013	–	–	0	–	261 500[5]	0	–	14 223	–	0	–	14 222
		2014	–	–	–	–	270 000[5]	10 121	–	–	–	0	–	6 761
	Bolivia (Plurinational State of)	2012	3 423 745	–	–	–	1 110 097[5]	1 909 295	0	72 000	0	0	0	0
		2013	2 112 710	–	–	–	1 110 097[5]	369 153	0	0	–	0	0	–
		2014	1 318 174	–	–	–	–	–	–	–	–	–	–	–
	Brazil	2012	-253 838*	–	–	–	61 378 194[5]	0	0	56 126	0	0	0	0
		2013	-228 780*	–	–	–	73 291 509[5]	0	0	18 700	–	0	0	–
		2014	–	–	–	–	72 248 286[5]	–	–	47 495	–	–	–	–
	Colombia	2012	3 369 591	–	–	–	22 898 987[5]	5 959 287	0	120 000	0	45 000	0	0
		2013	6 737 839	–	–	–	23 100 498[5]	4 832 745	0	120 000	0	0	0	0
		2014	2 894 197	–	–	–	11 493 708[5]	3 257 687	0	84 974	0	0	0	0
	Costa Rica	2012	–	–	–	–	5 350 000[5]	0	–	0	0	0	0	0
		2013	–	–	0	–	4 830 000[5]	0	–	–	–	0	–	0
		2014	–	–	–	–	–	129 000	–	–	–	0	–	0
	Dominican Republic	2012	1 475 716	–	–	–	2 068 141[5]	2 323 120	0	0	0	0	0	20 776
		2013	1 149 536	–	–	–	1 966 812[5]	1 158 508	0	0	0	21 930	0	23 382
		2014	514 691	–	–	–	1 883 503[5]	852 947	0	0	0	0	0	106 598
	Ecuador	2012	1 690 157	–	–	–	2 003 620[5]	150 820	0	3 595	0	0	0	0
		2013	1 110 598	–	–	–	1 852 740[5]	735 047	0	50 000	–	0	0	–
		2014	1 002 244	–	–	–	–	983 835	–	–	–	–	–	98 057
	El Salvador	2012	–	–	–	–	3 688 650[5]	0	–	0	0	0	0	0
		2013	–	–	0	–	2 854 844[5]	0	–	–	–	56 948	–	–
		2014	–	–	–	–	–	0	–	–	–	54 340	–	0

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			Global Fund[1]	PMI/ USAID[2]	The World Bank[3]	UK[4]	Government	Global Fund	The World Bank	PMI/ USAID	Other bilaterals	WHO	UNICEF	Other contributions[6]
Region of the Americas	French Guiana, France	2012	–	–	–	–	–	0	0	0	0	0	0	0
		2013	–	–	–	–	–	0	0	0	0	0	0	0
		2014	–	–	–	–	–	0	0	0	0	0	0	0
	Guatemala	2012	2 821 516	–	–	–	5 637 645[5]	2 780 074	0	10 561	0	5 260	0	0
		2013	–2 089 393*	–	–	–	1 385 919[5]	3 498 024	0	105 373	0	0	0	0
		2014	4 388 420	–	–	–	542 663[5]	3 278 171	0	92 461	0	0	0	0
	Guyana	2012	425 717	–	–	–	1 075 952[5]	799 527	0	150 000	0	20 000	0	0
		2013	379 266	–	–	–	904 858[5]	809 474	0	297 569	0	15 899	0	0
		2014	–	–	–	–	800 439[5]	451 597	0	115 708	0	130 882	0	0
	Haiti	2012	4 516 089	–	–	–	–	19 317 275	0	64 222	0	205 000	0	745 000
		2013	3 902 655	–	–	–	2 433 241[5]	4 011 797	0	–	0	169 000	0	820 000
		2014	4 531 760	–	–	–	–	5 257 474	0	102 864	0	24 413	0	–
	Honduras	2012	1 288 990	–	–	–	592 631[5]	970 940	0	58 936	0	16 437	0	0
		2013	954 631	–	–	–	971 742[5]	1 106 404	0	99 330	6 000	0	0	6 000
		2014	967 393	–	–	–	543 312[5]	792 634	0	113 187	0	0	0	6 046
	Mexico	2012	–	–	–	–	24 285 354[5]	0	–	0	0	0	0	0
		2013	–	–	0	–	25 256 768[5]	0	–	–	–	0	–	0
		2014	–	–	–	–	23 827 054[5]	0	–	–	–	0	–	0
	Nicaragua	2012	803 339	–	–	–	439 258[5]	1 747 908	0	43 163	0	6 001	0	5 333
		2013	2 431 682	–	–	–	980 326[5]	2 075 252	0	37 630	0	0	0	0
		2014	1 010 094	–	–	–	631 907[5]	1 214 811	0	52 976	0	0	0	0
	Panama	2012	–	–	–	–	7 919 505[5]	0	0	27 065	0	17 186	0	0
		2013	–	–	0	–	7 220 410[5]	0	0	32 136	0	0	0	0
		2014	–	–	–	–	11 117 148[5]	200 000	0	77 562	0	0	0	0
	Paraguay	2012	–	–	–	–	2 115 436[5]	0	0	0	0	5 635	0	0
		2013	–	–	0	–	5 145 662[5]	0	0	0	–	0	0	0
		2014	–	–	–	–	5 574 580[5]	0	–	–	–	5 740	–	0
	Peru	2012	–	–	–	–	125 155 514[5]	0	0	77 438	0	–	0	0
		2013	–	–	0	–	429 285[5]	0	0	56 073	0	0	0	0
		2014	–	–	–	–	–	0	0	102 871	0	0	0	0
	Suriname	2012	355 313	–	–	–	1 428 000[5]	355 000	0	0	0	0	0	0
		2013	549 463	–	–	–	152 805[5]	550 000	0	156 965	400 000	100 000	0	400 000
		2014	158 751	–	–	–	1 650 498[5]	479 600	0	0	400 541	100 000	0	0
	Venezuela (Bolivarian Republic of)	2012	–	–	–	–	790 292[5]	0	0	0	–	–	–	–
		2013	–	–	0	–	800 000[5]	0	0	0	–	–	–	–
		2014	–	–	–	–	1 000 000[5]	0	0	0	–	–	–	–
Eastern Mediterranean	Afghanistan	2012	12 526 779	–	1 729 231	–	–	10 613 985	–	–	–	116 291	–	–
		2013	17 626 010	–	3 154 876	–	–	16 651 753	–	–	–	109 068	–	–
		2014	8 403 364	–	–	–	–	9 083 870	–	–	–	113 341	–	–
	Djibouti	2012	44 923	–	–	–	1 050 000[5]	48 527	8 413	–	–	55 782	142 000	–
		2013	–	–	52 000	–	–	–	–	–	–	121 616	200 563	9 200
		2014	–	–	–	–	–	–	–	–	–	–	–	–
	Iran (Islamic Republic of)	2012	8 256 054	–	–	–	9 222 400	5 238 195	–	–	–	73 000	–	–
		2013	3 180 088	–	–	–	5 000 000	0	–	–	–	60 500	–	–
		2014	2 665 232	–	–	–	6 300 000	2 979 260	–	–	–	34 000	–	–
	Pakistan	2012	19 030 225	–	–	–	2 500 000[5]	15 231 843	–	–	–	–	–	–
		2013	5 849 945	–	–	–	–	8 057 177	–	–	–	–	–	–
		2014	9 003 535	–	–	–	–	10 718 906	–	–	–	154 000	–	–
	Saudi Arabia	2012	–	–	–	–	29 440 000	–	–	–	–	–	–	–
		2013	–	–	0	–	29 440 000	–	–	–	–	–	–	–
		2014	–	–	–	–	30 000 000	0	–	–	–	0	–	0
	Somalia	2012	22 059 494	–	–	–	63 250	11 904 217	0	0	200 000	103 400	–	–
		2013	2 266 628	–	–	–	64 515	15 062 018	0	0	–	138 400	–	–
		2014	9 672 384	–	–	–	67 740	9 604 810	0	0	0	85 000	0	0

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			Global Fund[1]	PMI/ USAID[2]	The World Bank[3]	UK[4]	Government	Global Fund	The World Bank	PMI/ USAID	Other bilaterals	WHO	UNICEF	Other contributions[6]
Eastern Mediterranean	Sudan	2012	51 832 249	0	–	–	26 709 969	38 398 132	–	–	–	641 921	494 000	1 680 907
		2013	35 680 104	0	–	–	26 724 830	34 938 594	–	–	–	475 893	140 000	–
		2014	16 053 353	0	–	–	27 316 109	35 883 294	–	–	–	446 160	–	–
	Yemen	2012	9 824 756	–	–	–	1 136 850	8 908 540	–	–	–	–	–	5 807 093
		2013	5 973 123	–	–	–	2 293 553[5]	6 256 730	–	–	–	200 000	–	1 986 444
		2014	2 017 535	–	–	–	8 480	2 110 776	–	–	258 495	465 713	–	1 674 350
European	Azerbaijan	2012	587 129	–	–	–	5 000 968	462 920	–	–	0	35 000	–	0
		2013	554 196	–	–	–	4 827 461	432 570	–	–	–	35 000	–	0
		2014	-35 242*	–	–	–	2 446 419	0	–	–	–	35 000	–	0
	Kyrgyzstan	2012	496 411	–	–	–	70 000	850 061	–	–	0	0	–	0
		2013	580 063	–	–	–	65 000	434 351	–	–	–	25 000	–	0
		2014	376 878	–	–	–	72 300	511 055	–	–	–	25 000	–	0
	Tajikistan	2012	2 240 695	–	–	–	416 753[5]	2 068 376	–	–	–	20 000	–	0
		2013	1 308 106	–	–	–	633 740	1 714 393	–	–	–	35 000	–	–
		2014	1 032 277	–	–	–	773 000	1 057 879	–	–	–	75 000	–	0
	Turkey	2012	–	–	–	–	22 927 000	0	–	–	0	0	–	0
		2013	0	–	–	–	–	0	–	–	–	0	–	0
		2014	–	–	–	–	–	0	–	–	–	0	–	0
	Uzbekistan	2012	442 231	–	–	–	1 208 161	448 627	–	–	0	0	–	0
		2013	544 742	–	–	–	1 480 992	288 060	–	–	–	0	–	0
		2014	–	–	–	–	1 872 954	265 139	–	–	–	20 000	–	0
South-East Asia	Bangladesh	2012	2 346 342	–	–	–	4 761 717	7 505 444	439 490	–	–	98 000	–	–
		2013	16 404 817	–	–	–	4 134 615	8 033 087	–	–	–	399 189	–	–
		2014	4 395 406	–	–	–	5 586 290	8 912 484	–	–	–	–	–	–
	Bhutan	2012	440 259	–	–	–	213 595	292 324	–	–	–	27 898	–	146 759
		2013	405 271	–	–	–	–	–	–	–	–	–	–	–
		2014	239 889	–	–	–	–	–	–	–	–	–	–	–
	Democratic People's Republic of Korea	2012	3 228 671	–	–	–	1 882 000	6 568 434	0	0	0	5 000	0	0
		2013	2 706 329	–	–	–	1 895 000	2 706 329	0	0	0	25 000	0	0
		2014	6 704 605	–	–	–	1 957 000	1 571 206	0	0	0	98 000	0	0
	India	2012	11 457 066	–	15 798 300	–	47 240 020	7 863 868	16 696 978	–	–	–	–	–
		2013	7 174 057	–	5 377 070	–	51 336 600	4 811 540	4 299 233	–	–	–	–	–
		2014	4 481 942	–	–	–	43 802 468	16 129 032	0	–	–	–	–	–
	Indonesia	2012	18 763 721	–	–	–	14 360 336[5]	11 072 851	0	0	0	51 141	471 362	0
		2013	31 045 276	–	–	297 389	15 288 402[5]	34 580 791	0	0	0	400 000	3 525 000	0
		2014	11 488 128	–	–	–	16 108 194[5]	15 913 410	0	0	0	400 000	3 490 400	0
	Myanmar	2012	19 766 042	0	–	2 344 460	1 000 000	10 513 382	–	5 500 000	1 757 475	142 500	948 890	870 441
		2013	15 032 712	6 566 000	–	11 283 400	1 028 807	14 863 117	–	5 400 000	–	142 500	1 000 000	–
		2014	18 254 744	8 000 000	–	–	–	42 620 577	–	6 565 881	451 400	25 000	–	5 561 917
	Nepal	2012	6 182 591	–	–	–	726 465	2 960 440	–	–	–	46 500	–	–
		2013	4 922 108	–	–	–	1 910 485	3 110 685	–	–	–	46 500	–	–
		2014	1 813 110	–	–	–	–	–	–	–	–	46 500	–	–
	Sri Lanka	2012	2 618 112	–	–	–	572 945	1 442 758	–	–	–	7 400	–	–
		2013	3 877 889	–	–	–	601 528	1 382 732	–	–	–	10 000	–	–
		2014	2 318 045	–	–	–	708 377	1 433 109	–	–	–	–	–	–
	Thailand	2012	7 152 654	–	–	–	7 098 780	16 246 556	–	–	–	104 979	–	79 772
		2013	11 325 529	–	–	–	5 893 255	9 937 671	–	278 311	–	139 166	–	70 833
		2014	16 524 453	–	–	–	7 546 409	20 175 612	0	345 667	0	0	0	0
	Timor-Leste	2012	5 040 394	0	–	–	2 687 572	5 375 143	0	0	80 000	25 000	0	0
		2013	2 604 409	0	–	–	2 981 432	4 372 545	–	–	–	65 012	–	120 000
		2014	1 527 841	0	–	–	–	3 482 955	–	–	–	–	–	–
	Cambodia	2012	1 441 288	0	–	–	3 427 795	22 685 407	0	456 796	640 741	201 718	0	0
		2013	12 111 758	3 997 000	–	–	3 484 029	13 240 888	0	3 996 624	0	431 792	0	–
		2014	17 983 122	4 500 000	–	–	714 343	2 917 174	0	4 500 000	0	334 029	0	–
	China	2012	12 839 868	–	–	–	–	33 697 258	–	–	–	–	–	–
		2013	1 856 499	–	–	–	16 812 725	0	0	0	0	0	0	0
		2014	-1 738 247*	–	–	–	20 843 118	0	–	–	–	0	–	0

WHO Region	Country/area	Year	Contributions reported by donors				Contributions reported by countries							
			Global Fund[1]	PMI/ USAID[2]	The World Bank[3]	UK[4]	Government	Global Fund	The World Bank	PMI/ USAID	Other bilaterals	WHO	UNICEF	Other contributions[6]
Western Pacific	Lao People's Democratic Republic	2012	6 394 183	–	406 198	–	1 361 672	3 745 346	0	271 773	620 000	20 000	0	2 500
		2013	3 256 001	–	695 423	–	1 122 915	4 038 937	0	120 132	0	20 000	0	0
		2014	2 322 590	–	–	–	247 375	2 475 938	0	0	0	113 000	0	43 620
	Malaysia	2012	–	–	–	–	44 424 578	–	–	–	–	–	–	–
		2013	–	–	0	–	39 845 997	–	–	–	–	0	–	0
		2014	–	–	–	–	57 535 038	0	–	–	–	0	–	0
	Papua New Guinea	2012	22 934 883	–	–	–	584 290[5]	–	–	–	–	–	–	–
		2013	22 970 152	–	–	–	388 000	25 311 547	0	0	–	–	0	–
		2014	10 970 461	–	–	–	377 000	695 052	0	0	0	0	0	0
	Philippines	2012	4 271 657	–	–	–	3 939 519[5]	7 224 199	0	0	0	–	0	0
		2013	4 806 916	–	–	–	5 235 686	8 612 874	0	0	0	315 326	0	22 220
		2014	6 932 455	–	–	–	5 861 758	7 395 343	0	0	0	0	0	0
	Republic of Korea	2012	–	–	–	–	681 674	0	–	–	0	0	–	0
		2013	–	–	0	–	519 102	0	–	–	–	0	–	0
		2014	–	–	–	–	556 200	0	–	–	–	0	–	0
	Solomon Islands	2012	–	–	–	–	269 486	1 696 290	0	0	0	706 000	0	5 432 362
		2013	–	–	–	–	270 180	1 305 840	0	0	1 987 523	852 472	0	674 896
		2014	–	–	–	–	260 505	1 362 022	0	0	1 820 735	654 985	0	0
	Vanuatu	2012	–	–	–	–	812 377[5]	2 446 418	0	0	0	287 615	0	1 178 215
		2013	–	–	0	–	812 377[5]	1 162 890	0	0	1 692 091	287 615	0	0
		2014	–	–	–	–	812 377[5]	1 310 500	0	0	1 064 592	287 615	0	0
	Viet Nam	2012	4 059 889	–	1 003 840	–	4 615 385	3 961 323	0	0	0	493 802	0	0
		2013	4 249 171	–	-2 733*	–	4 523 810	5 254 143	0	0	0	410 000	0	0
		2014	3 777 902	–	–	–	2 666 667	15 263 816	0	0	0	640 700	0	0

PMI, United States President's Malaria Initiative; UK, Funding from the United Kingdom government; UNICEF, United Nations Children's Fund; USAID, United States Agency for International Development

1 Source: The Global Fund
2 Source: www.foreignassistance.gov
3 Source: OECD Database
4 Source: OECD Database
5 Budget not expenditure
6 Other contributions as reported by countries: NGOs, foundations, etc.
7 South Sudan became an independent State on 9 July 2011 and a Member State of WHO on 27 September 2011. South Sudan and Sudan have distinct epidemiological profiles comprising high transmission and low transmission areas respectively. For this reason data up to June 2011 from the high transmission areas of Sudan (10 southern states which correspond to South Sudan) and low transmission areas (15 northern states which correspond to contemporary Sudan) are reported separately.
8 Where national totals for the United Republic of Tanzania are unavailable, refer to the sum of Mainland and Zanzibar
* Negative disbursements reflect recovery of funds on behalf of the financing organization.

Annex 4 – Intervention coverage estimated from routinely collected data, 2012–2014

WHO region	Country/area	Year	No. of ITN + LLIN sold or delivered	No. of LLIN sold or delivered	No. of ITN sold or delivered	% ITN coverage	Modelled % of population with access to an ITN	No. of people protected by IRS	% IRS coverage	Any first-line treatment courses delivered (including ACT)	ACT treatment courses delivered	% Any antimalarial coverage[1]	% ACT coverage[2]
African	Algeria	2012	0	0	0	–	–	13 000	0	887	0	65	0
		2013	0	0	0	–	–	17 407	1	603	0	87	0
		2014	0	0	0	–	–	–	–	266	92	87	39
	Angola	2012	477 044	477 044	0	31	26	676 090	3	3 747 190	3 747 190	100	100
		2013	1 182 519	1 182 519	0	26	31	419 353	2	2 814 900	2 814 900	100	100
		2014	2 978 937	2 978 937	0	34	41	58 370	0	–	–	–	–
	Benin	2012	708 643	708 643	0	100	44	694 729	7	–	–	–	–
		2013	584 285	584 285	0	100	20	694 729	7	–	–	–	–
		2014	6 203 924	6 203 924	0	100	46	789 883	7	1 101 154	1 101 154	100	100
	Botswana	2012	52 500	52 500	0	19	35	163 647	12	4 606	4 606	100	100
		2013	0	0	0	8	36	176 887	12	3 953	3 953	100	100
		2014		0	0	6		205 831	14	–	–	–	–
	Burkina Faso	2012	264 432	264 432	0	86	59	115 638	1	5 720 987	5 720 987	96	96
		2013	9 959 820	9 959 820	0	100	65	0	0	5 797 938	5 797 938	100	100
		2014	307 243	307 243	0	100	84	0	0	7 494 498	7 494 498	100	100
	Burundi	2012	703 699	703 699	0	84	64	59 300	1	2 183 228	2 183 228	100	100
		2013	731 981	731 981	0	74	58	0	0	3 836 437	3 836 437	100	100
		2014	5 752 583	5 752 583	0	100	71	0	0	4 772 805	4 263 178	100	100
	Cabo Verde	2012	0	0	0	–	18	282 265	100	6 960	3 960	100	100
		2013	0	0	0	–	20	298 475	100	4 824	3 144	100	100
		2014	0	0	0	–	–	25 780	19	46	41	95	85
	Cameroon	2012	217 600	217 600	0	71	62	0	0	762 338	760 375	37	36
		2013		0	0	68	49	0	0	1 048 811	497 022	48	23
		2014		0	0	2	36	0	0	1 270 172	1 270 172	59	59
	Central African Republic	2012	30 000	30 000	0	38	33	0	0			–	–
		2013	150 000	150 000	0	7	35	0	0	420 000	420 000	58	58
		2014	555 334	555 334	0	28	62			522 270	522 270	95	95
	Chad	2012		0	0	55	54	–	–			–	–
		2013	230 043	230 043	0	52	57	–	–	814 449	814 449	100	100
		2014	6 321 676	6 321 676	0	88	69	–	–	1 038 000	1 038 000	100	100
	Comoros	2012	666	666	0	66	47	–	–	–	–	–	–
		2013	377 252	377 252	0	93	55	31 150	4	60 868	60 868	100	100
		2014	13 576	13 576	0	92	80	22 475	3	4 750	4 750	9	9
	Congo	2012	1 203 982	1 203 982	0	72	48	0	0	202 402	202 402	25	25
		2013	14 005	14 005	0	71	40	0	0	–	0	0	0
		2014	180 595	180 595	0	56	28	0	0	–	0	0	0
	Côte d'Ivoire	2012		0	0	71	36	–	–	6 888 647		100	–
		2013	1 821 267	1 821 267	0	83	15	–	–	2 358 567	2 358 567	76	76
		2014	12 627 282	12 627 282	0	100	54	–	–	–	–	–	–
	Democratic Republic of the Congo	2012	18 644 449	18 644 449	0	84	48	187 386	0	11 693 982	11 693 982	100	100
		2013	7 947 747	7 947 747	0	96	49	185 252	0	14 941 450	7 112 841	100	100
		2014	13 918 109	13 918 109	0	97	48	194 566	0	19 008 927	19 008 927	100	100
	Equatorial Guinea	2012	4 431	4 431	0	2	24	148 092	19	40 199	40 199	45	45
		2013	8 397	8 397	0	4	18	129 000	16	40 911	40 911	38	38
		2014	10 010	10 010	0	5	31	165 944	20	14 577		7	–
	Eritrea	2012	83 943	83 943	0	43	46	298 734	6	219 793	219 793	100	100
		2013	86 597	86 597	0	42	38	275 857	6	182 911	182 911	100	100
		2014	0	0	0	6	38	320 881	6	216 195	216 195	100	100
	Ethiopia	2012	6 260 000	6 260 000	0	70	49	15 468 785	25	9 000 000	9 000 000	100	100
		2013	11 709 780	11 709 780	0	62	51	23 150 388	36	12 800 000	9 164 641	100	100
		2014	13 388 552	13 388 552	0	86	58	16 709 249	25	7 321 471	5 321 471	100	100
	Gabon	2012		0	0	–	28	–	–	–	–	–	–
		2013	21 666	21 666	0	2	21	0	0	–	–	–	–
		2014	10 000	10 000	0	3	15	–	–	984 423	984 423	100	100

WHO region	Country/area	Year	No. of ITN + LLIN sold or delivered	No. of LLIN sold or delivered	No. of ITN sold or delivered	% ITN coverage	Modelled % of population with access to an ITN	No. of people protected by IRS	% IRS coverage	Any first-line treatment courses delivered (including ACT)	ACT treatment courses delivered	% Any antimalarial coverage[1]	% ACT coverage[2]
African		2012	275 042	275 042	0	100	81	484 086	27	484 901	484 901	83	83
	Gambia	2013	138 149	138 149	0	100	82	800 290	43	468 767	468 767	100	100
		2014	1 046 510	1 046 510	0	100	82	350 442	18	319 182	319 182	100	100
		2012	7 874 094	7 874 094	0	92	62	2 117 240	8	4 170 828	4 170 828	90	90
	Ghana	2013	1 926 300	1 926 300	0	96	79	2 936 037	11	8 330 784	8 330 784	100	100
		2014	5 190 887	5 190 887	0	100	77	2 154 924	8	14 267 045	14 267 045	100	100
		2012	90 188	90 188	0	3	27	-	-	902 516	802 110	28	24
	Guinea	2013	5 268 245	5 268 245	0	81	43	-	-	370 771	1 402 400	11	43
		2014	73 145	73 145	0	80	73	-	-	1 312 802	644 829	77	38
		2012	73 819	73 819	0	33	69	-	-	-	-	-	-
	Guinea-Bissau	2013	116 268	116 268	0	37	76	-	-	-	-	-	-
		2014	1 109 568	1 109 568	0	100	82	-	-	171 540	171 540	59	100
		2012	4 226 261	4 226 261	0	61	78	2 435 836	6	12 000 000	12 000 000	100	100
	Kenya	2013	1 641 982	1 641 982	0	61	77	0	0	8 300 000	7 000 000	100	100
		2014	5 450 064	5 450 064	0	45	73	0	0	10 839 611	10 614 717	100	100
		2012		0	0	74	44	960 000	23	6 507 544	5 064 014	100	100
	Liberia	2013	0	0	0	35	38	367 930	9	1 332 055	443 900	100	63
		2014	0	0	0	-	56	0	0	100 535	96 787	14	13
		2012	3 939 740	3 939 740	0	76	52	1 597 374	7	2 026 100	2 026 100	100	100
	Madagascar	2013	6 947 498	6 947 498	0	89	62	1 579 521	7	266 000	266 000	33	33
		2014	60 091	60 091	0	84	81			467 854	467 854	95	95
		2012	6 742 108	6 742 108	0	100	49	1 873 056	12	6 956 821	6 956 821	100	100
	Malawi	2013	636 318	636 318	0	94	77	-	-	7 601 460	7 601 460	100	100
		2014	1 423 507	1 423 507	0	95	67	-	-	8 735 160	8 735 160	100	100
		2012	1 935 348	1 935 348	0	80	63	758 021	5	3 842 790	3 842 790	97	97
	Mali	2013	636 465	636 465	0	73	51	826 386	5	3 080 130	3 080 130	72	72
		2014	3 790 403	3 790 403	0	67	60	836 568	5	2 211 118	2 211 118	51	51
		2012	13 000	13 000	0	49	9	-	-			-	-
	Mauritania	2013	105 000	105 000	0	12	8	-	-	56 015	56 015	92	92
		2014	178 922	178 922	0	13	9	-	-	176 192	176 192	100	100
		2012	40 988	40 988	0	100	-	4 339	9	-	-	100	100
	Mayotte, France	2013	39 400	39 400	0	100	-	381	1	-	-	100	100
		2014	5 252	5 252	0	100	-	450	1	-	-	100	100
		2012	2 669 244	2 669 244	0	52	49	1 789 110	7	5 106 570	5 106 570	67	67
	Mozambique	2013	3 315 727	3 315 727	0	63	55	9 647 202	36	13 477 650	13 477 650	100	100
		2014	6 112 245	6 112 245	0	80	69	5 597 770	21	15 976 059	15 976 059	100	100
		2012	93 900	93 900	0	27	70	559 305	31	22 313	22 313	100	100
	Namibia	2013	104 249	104 249	0	28	65	598 901	32	90 377	87 520	100	100
		2014	163 526	163 526	0	34	-	467 930	25	-	-	-	-
		2012	541 550	541 550	0	20	35	192 761	1	3 500 243	3 500 243	100	100
	Niger	2013	409 400	409 400	0	15	27	0	0	6 556 070	6 556 070	100	100
		2014	2 048 430	2 048 430	0	30	40	0	0	5 731 036	5 731 036	100	100
		2012	14 448 634	14 448 634	0	55	36	2 415 540	1	12 877 360	12 877 360	36	36
	Nigeria	2013	8 559 372	8 559 372	0	43	38	132 211	0	32 568 349	32 568 349	92	92
		2014	23 328 225	23 328 225	0	47	48	316 255	0	22 145 889	22 145 889	100	100
		2012	1 675 233	1 675 233	0	100	52	1 080 889	10	619 786	611 482	100	100
	Rwanda	2013	5 249 761	5 249 761	0	100	57	1 562 411	14	1 204 913	1 204 913	100	100
		2014	1 373 582	1 373 582	0	100	62	1 243 704	11	1 917 021	1 917 021	100	100
		2012	105 312	105 312	0	100	52	146 773	82	10 703	10 703	85	85
	Sao Tome and Principe	2013	14 596	14 596	0	100	53	153 514	84	8 752	8 752	82	82
		2014	11 385	11 385	0	100	-	124 692	67	1 456	1 456	72	72
		2012	267 482	267 482	0	44	48	1 095 093	8	713 344	713 344	100	100
	Senegal	2013	3 902 145	3 902 145	0	84	53	690 090	5	976 840	976 840	100	100
		2014	3 785 595	3 785 595	0	98	76	708 999	5	703 712	703 712	96	96
		2012	139 391	139 391	0	100	24	986 898	16	2 004 308	2 004 308	100	100
	Sierra Leone	2013	441 859	441 859	0	18	32	0	0	2 201 370	2 201 370	100	100
		2014	3 846 204	3 846 204	0	100	60	0	0	1 391 273	1 391 273	85	85

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African	South Africa	2012	0	0	0	–	37	5 000 000	95	3 897	3 897	57	57
		2013	0	0	0	–	43	2 318 129	43	8 272	5 444	61	40
		2014	0	0	0	–	–	5 650 177	100	14 036	14 036	88	88
	South Sudan[3]	2012	1 036 109	1 036 109	0	59	61	170 440	2	4 333 150	4 333 150	100	100
		2013	3 144 818	3 144 818	0	72	71	332 968	3	3 125 448	3 125 448	100	100
		2014		0	0	63	75		–	–	–	–	–
	Swaziland	2012	40 612	40 612	0	83	69	0	0	200	197	27	27
		2013	0	0	0	45	73	0	0	356	307	24	21
		2014	5 399	5 399	0	23	–	3 971	1	588	558	79	75
	Togo	2012	329 999	329 999	0	83	72	0	0	812 911	914 218	91	100
		2013	468 575	468 575	0	87	59	0	0	964 927	802 904	100	97
		2014	4 042 425	4 042 425	0	100	70	0	0	1 134 604	1 208 529	62	66
	Uganda	2012	1 000 747	1 000 747	0	46	38	2 543 983	7	23 864 320	23 864 320	100	100
		2013	13 219 306	13 219 306	0	73	47	2 581 839	7	24 375 450	24 375 450	100	100
		2014	10 615 631	10 615 631	0	100	75	3 219 122	9			–	–
	United Republic of Tanzania	2012	2 208 293	2 208 293	0	–	65	–	–	10 175 160	10 175 160	100	100
		2013	2 547 391	2 547 391	0	–	44	–	–	–	–	–	–
		2014	510 000	510 000	0	–	27	–	–	–	–	–	–
	Mainland	2012	1 535 867	1 535 867	0	94	65	6 518 120	14	10 128 060	10 128 060	100	100
		2013	2 489 536	2 489 536	0	68	44	3 537 097	7	20 377 410	20 377 410	100	100
		2014	510 000	510 000	0	16	27	2 000 000	4	19 937 820	19 937 820	100	100
	Zanzibar	2012	672 426	672 426	0	96	–	255 930	19	47 100	47 100	100	87
		2013	57 855	57 855	0	96	–	224 900	16	5 075	5 075	100	9
		2014		0	0	90	–	–	–	–	–	100	–
	Zambia	2012	2 688 575	2 688 575	0	89	77	4 250 000	29	4 289 743	4 289 743	100	100
		2013	3 362 588	3 362 588	0	100	81	1 063 460	7	15 926 301	15 926 301	100	100
		2014	6 368 026	6 368 026	0	100	87	5 538 574	35	13 000 845	13 000 845	100	100
	Zimbabwe	2012	457 000	457 000	0	26	39	3 106 659	27	1 236 958	1 236 958	100	100
		2013	2 010 000	2 010 000	0	38	60	3 106 659	26	815 260	815 260	100	100
		2014	1 743 542	1 743 542	0	63	88	3 460 871	29	960 455	960 455	100	100
Eastern Mediterranean	Afghanistan	2012	37 551	37 551	0	35	–	0	0			–	–
		2013	359 622	359 622	0	29	–	0	0	11 135	11 135	–	–
		2014	4 325 552	4 325 552	0	36	–	0	0	21 625	21 625	–	–
	Djibouti	2012	26 400	26 400	0	23	29	0	0			–	–
		2013	25 700	25 700	0	22	26	0	0	8 920	8 920	–	–
		2014		0	0	21	23					–	–
	Iran (Islamic Republic of)	2012	243 728	243 728	0	98	–	204 224	26	5 670	3 100	100	100
		2013	169 084	169 084	0	100	–	281 203	36	6 230	3 400	100	100
		2014	70 360	70 360	0	100	–	289 249	36	8 830	8 830	100	100
	Pakistan	2012	439 181	439 181	0	0	–	4 584 426	3	2 280 000	596 600	–	–
		2013	2 238 300	2 238 300	0	3	–	1 161 825	1	2 150 000	590 840	–	–
		2014	1 519 947	1 519 947	0	4	–	1 103 480	1	907 200	162 880	–	–
	Saudi Arabia	2012	767 000	767 000	0	72	–	2 210 000	94	1 283	1 283	100	100
		2013	750 000	750 000	0	100	–	1 736 400	72	974	974	100	100
		2014	1 450 000	1 450 000	0	100	–	752 851	30	1 155	1 155	100	100
	Somalia	2012	455 000	455 000	0	14	15	240 558	2	18 868	9 268	–	–
		2013	525 000	525 000	0	21	23	90 060	1	292 000	292 000	–	–
		2014	413 000	413 000	0	24	26	61 362	1	155 450	155 450	–	–
	Sudan	2012	782 901	782 901	0	14	34	2 945 746	8	2 478 038	2 462 470	–	–
		2013	5 803 319	5 803 319	0	35	40	3 902 712	10	2 630 400	2 077 204	–	–
		2014	4 432 714	4 432 714	0	50	54	3 942 110	10	3 823 175	3 823 175	–	–
	Yemen	2012	1 209 215	1 209 215	0	16	–	1 886 500	10	179 000	166 500	–	–
		2013	1 405 837	1 405 837	0	24	–	2 204 429	11	303 847	303 847	–	–
		2014	375 899	375 899	0	26	–	2 188 436	11	215 486	215 486	–	–
European	Azerbaijan	2012	10 000	10 000	0	25	–	211 500	98	4	1	100	100
		2013	0	0	0	16	–	209 004	96	4	4	100	100
		2014	0	0	0	8	–	187 261	85	2	2	100	100

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European	Kyrgyzstan	2012	35 000	35 000	0	100	-	146 466	100	3	0	100	100
		2013	35 000	35 000	0	100	-	100 633	100	4	0	100	100
		2014	35 000	35 000	0	100	-	115 680	100	-	0	100	100
	Tajikistan	2012	100 000	100 000	0	17	-	503 156	19	31	2	100	100
		2013	100 000	100 000	0	21	-	437 436	16	1	1	100	100
		2014	50 000	50 000	0	16	-	387 010	14	-	0	100	100
	Turkey	2012	0	0	0	-	-	50	0	600	235	100	100
		2013	0	0	0	-	-	2 120	12	400	350	100	100
		2014	0	0	0	-	-	2 120	12	350	300	100	100
	Uzbekistan	2012	20 000	20 000	0	100	-	375 605	100	1	1	100	100
		2013	0	0	0	100	-	328 020	100	3	3	100	100
		2014	0	0	0	100	-	372 967	100	1	1	100	100
Region of the Americas	Argentina	2012	-	0	0	-	-	26 712	13	50	-	100	100
		2013	-	0	0	-	-	24 636	12	50	-	100	100
		2014	-	0	0	-	-	300	0	-	-	-	100
	Belize	2012	3 000	3 000	0	2	-	20 052	9	37	1	100	100
		2013	2 324	2 324	0	4	-	21 413	9	26	0	100	100
		2014	2 452	2 452	0	6	-	21 413	9	19	0	100	100
	Bolivia (Plurinational State of)	2012	24 526	24 526	0	4	-	28 000	1	7 400	350	65	65
		2013	20 965	20 965	0	3	-	30 280	1	7 342	959	100	-
		2014	23 580	23 580	0	3	-					-	-
	Brazil	2012	361 241	361 241	0	2	-	369 103	1	905 010	141 410	100	100
		2013	147 736	147 736	0	2	-	324 477	1	452 990	122 290	100	100
		2014	229 947	229 947	0	3	-	287 150	1	334 740	59 690	100	100
	Colombia	2012	313 398	313 398	0	11	-	359 100	3	171 342	50 398	100	100
		2013	146 196	146 196	0	12	-	154 000	1	68 879	48 285	100	100
		2014	169 500	169 500	0	11	-	519 333	5	86 228	32 489	100	100
	Costa Rica	2012	3 000	3 000	0	1	-	22 000	1	50	0	100	0
		2013	7 000	7 000	0	2	-	13 560	1	20	0	100	0
		2014	0	0	0	1	-	0	0	6	3	100	100
	Dominican Republic	2012	62 095	62 095	0	8	-	61 557	1	947	5	100	1
		2013	54 139	54 139	0	7	-	49 510	1	579	4	100	1
		2014	6 733	6 733	0	4	-	6 066	0	496	7	100	1
	Ecuador	2012	13 502	13 502	0	2	-	83 357	1	4 720	548	100	100
		2013	20 337	20 337	0	1	-	94 321	1	378	161	100	100
		2014		0	0	1	-	-	-	-	-	-	-
	El Salvador	2012	0	0	0		-	16 905	1	124 753	0	100	0
		2013	10 000	10 000	0	1	-	15 076	1	10 865	0	100	100
		2014	0	0	0	1	-	6 424	1	8	0	81	100
	French Guiana, France	2012	13 969	13 969	0	10	-	16 625	7	-	-	-	-
		2013	2 880	2 880	0	12	-	16 932	7	-	-	-	-
		2014	2 990	2 990	0	14	-		-	-	-	-	-
	Guatemala	2012	618 803	618 803	0	10	-	65 390	1	7 966	0	100	0
		2013	282 788	282 788	0	13	-	37 450	0	-	-	-	-
		2014	49 905	49 905	0	14	-	1 700	0	-	-	-	-
	Guyana	2012	16 800	16 800	0	11	-	20 700	3	31 601	20 291	100	87
		2013	27 921	27 921	0	15	-	41 000	6	31 479	13 655	100	51
		2014	152 996	152 996	0	50	-	25 592	4	12 354	12 354	65	100
	Haiti	2012	2 987 653	2 987 653	0	52	-	0	0	141 094	0	100	0
		2013	0	0	0	52	-	0	0	107 029	0	100	0
		2014	0	0	0	51	-	0	0	37 827		100	-
Region of the Americas	Honduras	2012	30 630	30 630	0	2	-	104 495	2	45 926	1	100	0
		2013	66 920	66 920	0	4	-	121 121	2	37 248	2	100	0
		2014	25 118	25 118	0	4	-	116 490	2	54 466	8	100	1
	Mexico	2012	52 766	52 766	0	16	-	42 985	1	2	2	0	100
		2013	4 500	4 500	0	2	-	49 401	1	2 974	4	100	100
		2014	7 500	7 500	0	3	-	47 775	1	4 592	6	100	100

WHO region	Country/area	Year	No. of ITN + LLIN sold or delivered	No. of LLIN sold or delivered	No. of ITN sold or delivered	% ITN coverage	Modelled % of population with access to an ITN	No. of people protected by IRS	% IRS coverage	Any first-line treatment courses delivered (including ACT)	ACT treatment courses delivered	% Any antimalarial coverage[1]	% ACT coverage[2]
Region of the Americas	Nicaragua	2012	18 350	18 350	0	3	-	87 446	3	218 419	1	100	0
		2013	17 100	17 100	0	3	-	126 403	4	49 256	0	100	0
		2014	83 279	83 279	0	7	-	54 834	2	68 878	0	100	0
	Panama	2012	0	0	0	-	-	21 071	12	920	0	100	0
		2013	0	0	0	-	-	17 055	10	705	0	94	0
		2014	0	0	0	-	-	11 422	6	874	0	86	0
	Paraguay	2012	0	0	0	-	-	40 126	17	15	0	100	-
		2013	0	0	0	-	-	19 425	8	11	2	100	18
		2014	0	0	0	-	-	12 809	5	8	7	100	100
	Peru	2012	9 900	9 900	0	0	-	108 629	1	-	-	-	-
		2013	4 600	4 600	0	0	-	43 617	0	42 670	6 504	64	61
		2014		0	0	0	-	69 155	1	-	-	-	-
	Suriname	2012		0	0	32	-	0	0	-	-	-	-
		2013	4 892	4 892	0	12	-	0	0	800	300	100	74
		2014	0	0	0	10	-	0	0			-	-
	Venezuela (Bolivarian Republic of)	2012	515	515	0	0	-	3 637 795	65	-	-	-	-
		2013	467	467	0	0	-	4 369 755	77		27 659	-	95
		2014	2 666	2 666	0	0	-	4 189 850	73	120 979	32 005	100	100
South-East Asia	Bangladesh	2012	85 976	20 052	65 924	23	-	0	0	94 810	71 040	100	100
		2013	717 000	612 000	105 000	25	-	0	0	42 390	42 390	100	100
		2014	786 764	728 773	57 991	15	-	0	0	75 479	58 770	100	100
	Bhutan	2012	10 000	10 000	0	39	-	141 322	26	82	35	95	98
		2013	93 726	93 726	0	36	-	32 824	6	518	518	100	100
		2014	80 609	80 609	0	59	-	144 669	26	118	118	100	-
	Democratic People's Republic of Korea	2012	332 000	332 000	0	11	-	1 835 016	15	23 537	0	100	100
		2013	0	0	0	6	-	2 651 612	22	15 673	0	100	100
		2014	0	0	0	5	-	2 617 120	21	11 212	0	100	100
	India	2012	0	0	0	1	-	49 942 758	4	30 523 925	3 147 400	100	100
		2013	0	0	0	1	-	45 854 424	4	147 000	147 000	17	32
		2014	0	0	0		-	45 150 612	4	211 500	211 500	19	29
	Indonesia	2012	844 737	844 737	0	17	-	257 915	0	341 697	341 697	13	24
		2013	913 135	913 135	0	13	-	253 815	0	300 008	300 008	13	24
		2014	6 416 947	6 416 947	0	22	-	103 285	0	212 346	212 165	11	19
	Myanmar	2012	2 964 812	1 042 244	1 922 568	22	-	56 414	0	546 060	546 060	74	100
		2013	2 812 517	1 508 557	1 303 960	25	-			371 663	371 663	79	100
		2014	917 666	904 613	13 053	20	-	48 626	0	281 103	281 103	100	100
	Nepal	2012	499 166	499 166	0	26	-	443 229	3	669 152	53 252	100	100
		2013	1 395 865	1 395 865	0	38	-	345 000	3	38 113	325	93	7
		2014	1 064 518	1 064 518	0	39	-	372 000	3	24 500	195	17	1
	Sri Lanka	2012	637 250	637 250	0	31	-	75 354	2	70	48	61	100
		2013	0	0	0	24	-	50 666	1	95	43	80	100
		2014	0	0	0	24	-	50	0	49	23	100	100
	Thailand	2012	264 806	139 000	125 806	4	-	451 730	1	3 348	3 348	10	26
		2013	783 896	670 000	113 896	6	-	106 374	0	15 069	15 069	36	83
		2014	631 596	528 850	102 746	8	-	362 469	1	19 314	19 314	51	100
	Timor-Leste	2012	25 148	25 148	0	39	-	159 743	16	5 211	2 923	85	100
		2013	253 037	253 037	0	54	-	0	0	23 667	3 131	100	100
		2014	99 572	99 572	0	65	-	110 707	11	3 432	330	100	100
Western Pacific	Cambodia	2012	2 177 808	2 177 808	0	63	-	0	0	422 024	422 024	100	100
		2013	5 418	5 418	0	58	-	0	0	117 547	117 547	100	100
		2014	372 789	70 411	302 378	42	-	0	0	118 483	114 159	100	100
	China	2012	257 935	0	257 935	0	-	1 096 877	0	-	-	-	-
		2013	58 874	0	58 874	0	-	447 639	0	4 127	3 919	100	100
		2014	19 899	19 899	0	0	-	504 936	0	43 150	9 350	100	100

WHO region	Country/area	Year	No. of ITN + LLIN sold or delivered	No. of LLIN sold or delivered	No. of ITN sold or delivered	% ITN coverage	Modelled % of population with access to an ITN	No. of people protected by IRS	% IRS coverage	Any first-line treatment courses delivered (including ACT)	ACT treatment courses delivered	% Any antimalarial coverage[1]	% ACT coverage[2]
Western Pacific	Lao People's Democratic Republic	2012	54 056	54 056	0	34	-	1 856	0	104 400	104 400	100	100
		2013	439 677	439 677	0	22	-	13 113	0	58 470	58 470	100	100
		2014	276 655	276 655	0	22	-	4 691	0	50 092	50 092	100	100
	Malaysia	2012	220 703	220 703	0	100	-	489 988	42	4 725	2 088	100	100
		2013	317 943	317 943	0	100	-	682 288	58	3 850	2 873	100	100
		2014	622 673	622 673	0	100	-	615 384	51	3 923	3 182	100	100
	Papua New Guinea	2012	1 062 508	1 062 508	0	78	-			886 560	886 560	89	100
		2013	1 625 831	1 625 831	0	94	-	0	0	915 330	915 330	100	100
		2014	1 613 140	1 613 140	0	100	-	-	-	802 080	802 080	100	100
	Philippines	2012	783 463	783 463	0	16	-	1 541 860	3	13 469	13 469	100	100
		2013	715 125	715 125	0	14	-	1 108 220	2	24 771	24 771	100	100
		2014	996 180	996 180	0	8	-	1 175 136	2	30 095	30 095	100	100
	Republic of Korea	2012	0	0	0	1	-	-	-	555	-	65	-
		2013	0	0	0	1	-	-	-	443	-	65	100
		2014	5 250	5 250	0	0	-	-	-	638	-	65	100
	Solomon Islands	2012	31 781	31 781	0	100	-	131 752	24	190 255	190 255	100	100
		2013	371 124	371 124	0	100	-	98 971	18	146 439	146 439	100	100
		2014	47 258	47 258	0	100	-	128 673	23	147 430	147 430	100	100
	Vanuatu	2012	35 863	35 863	0	100	-	9 705	4	52 010	52 010	100	100
		2013	94 232	94 232	0	100	-	3 033	1	24 000	24 000	100	100
		2014	42 916	42 916	0	100	-	0	0	24 000	24 000	100	100
	Viet Nam	2012	968 413	0	968 413	14	-	1 364 815	2	266 351	192 400	100	-
		2013	0	0	0	9	-	1 310 820	2	218 389	141 570	100	100
		2014	526 366	526 366	0	5	-	616 670	1	194 397	106 100	100	100

ACT, artemisinin-based combination therapy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net; LLIN, long-lasting insecticidal net

1 Based on presumed and confirmed cases adjusting for reporting completeness and any first-line treatment courses distributed as proxy indicator for treated cases
2 Based on presumed and confirmed cases adjusting for reporting completeness and % of *P. falciparum* using ACTs distributed as proxy indicator for treated cases
3 In May 2013 South Sudan was reassigned to the WHO African Region (WHA resolution 66.21, http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R21-en.pdf)

Annex 5 – Household surveys, 2012–2014

WHO region	Country/area	Source	% of HH that have at least one ITN	% of HH with enough ITNs for individuals who slept in the house the previous night	% of population with access to an ITN in their household	% of existing ITNs in HH used the previous night	% of the population who slept under an ITN the previous night	% of the children <5 years who slept under an ITN the previous night	% of pregnant women who slept under an ITN the previous night	% of HH sprayed by IRS within last 12 months	% of HH with = 1 ITN for 2 pers. and/or sprayed by IRS within last 12 months	% of children aged 6–59 months with a hemo-globin measure-ment <8g/dL	% of children aged 6–59 months with a positive micros-copy blood smear	% children <5 years with fever in last 2 weeks for whom advice or treatment was sought	% of children <5 years with fever in last 2 weeks who received an ACT among those who received any antimala-rial	% of children <5 years with fever in the last 2 weeks who had a finger or heel stick	% of women who received at least 3 doses of IPT during ANC visits during their last pregnancy
African	Benin	DHS 2012	-	43	64	89	62	-	74	7	47	7	29	59	32	17	11
	Burundi	DHS 2013	-	23	46	83	47	-	55	6	-	-	-	-	69	48	-
	Comoros	DHS 2012	-	23	41	93	37	-	44	6	28	-	-	55	14	29	12
	Congo	DHS 2012	33	9	23	90	25	31	26	-	-	4	-	67	40	29	18
	Côte d'Ivoire	DHS 2012	67	30	49	62	32	37	40	2	31	12	17	67	18	11	8
	Democratic Republic of the Congo	DHS 2013	-	24	47	85	49	-	59	-	-	8	-	-	19	19	-
		DHS 2014	-	24	47	85	49	-	59	-	-	8	23	59	18	19	6
	Gabon	DHS 2012	36	14	27	87	26	39	28	6	20	5	-	71	37	15	2
	Gambia	DHS 2013	-	19	45	77	36	-	46	32	43	12	1	66	31	37	6
	Ghana	DHS 2014	-	44	59	50	35	-	43	12	51	9	-	80	78	34	40
	Guinea	DHS 2012	-	9	25	68	19	-	28	2	11	17	44	54	5	9	12
	Liberia	DHS 2013	-	20	37	71	31	-	36	13	30	-	-	80	43	42	18
	Madagascar	DHS 2013	-	28	48	85	54	-	61	30	-	4	-	-	41	13	-
	Malawi	MIS 2012	55	18	37	91	40	56	51	9	25	9	28	59	91	36	13
	Mali	DHS 2013	-	38	65	90	58	-	73	6	42	21	53	49	17	12	13
	Namibia	DHS 2013	-	12	18	23	4	-	4	17	26	3	-	66	46	22	3
	Niger	DHS 2012	-	-	-	-	-	-	-	-	-	9	-	64	79	14	9
	Nigeria	DHS 2013	-	22	36	35	13	-	16	2	23	-	-	78	18	11	7
	Rwanda	DHS 2013	-	41	66	75	60	-	74	12	-	-	-	-	93	30	-
	Senegal	DHS 2013	-	27	57	66	39	-	43	13	-	10	-	-	18	-	-
		DHS 2014	-	34	58	63	39	-	38	10	41	5	1	59	10	11	3
	Sierra Leone	DHS 2013	-	14	38	93	41	-	52	5	-	17	-	-	77	40	-
	Togo	DHS 2014	-	32	49	61	33	-	40	-	-	9	38	61	48	24	24
	United Republic of Tanzania	DHS 2012	91	52	74	77	65	70	74	15	61	6	4	79	61	25	5
	Zambia	DHS 2014	-	24	47	65	34	-	41	31	48	-	-	77	90	49	50
Region of the Americas	Haiti	DHS 2012	19	5	11	64	7	12	8	2	7	4	-	49	-	12	-
	Honduras	DHS 2012	-	-	-	-	-	-	-	-	-	1	-	64	-	-	-
Eastern Mediterranean	Sudan	DHS 2012	51	-	31	-	14	16	-	-	-	-	-	-	-	-	-
South-East Asia	Indonesia	DHS 2012	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-
Western Pacific	Cambodia	DHS 2014	-	-	-	-	-	-	-	-	-	3	-	89	63	14	-
	China	DHS 2012	-	30	49	62	32	-	40	2	-	12	-	-	-	11	-

ACT = artemisinin-based combination therapy
ANC = antenatal care
DHS = demographic and health survey
MICS = multiple indicator cluster survey
MIS = malaria indicator survey
HH = households
IPT = intermittent preventive treatment
IPTp = intermittent preventive treatment in pregnancy
IRS = indoor residual spraying
ITN = insecticide-treated mosquito net

Annex 6A – Reported malaria cases and deaths, 2014

WHO region	Country/ area	Population				Reported malaria cases									Inpatient malaria cases and deaths		Method used to calulate[3]		Estimates, 2013					
																			Cases			Deaths		
		UN population	At risk (low + high)	At risk (high)	Number of people living in active foci	Suspected malaria cases	Presumed and confirmed malaria cases	Malaria case definition	Mic. slides/ RDTs performed	Mic. slides/ RDTs positive	Mic. slides/ RDTs *P. falciparum* (incl. mixed cases)	Mic. slides/ RDTs *P. vivax*	Imported cases / (introduced cases)	Presumed and confirmed cases at community level	RDT positive cases at community level	Inpatient malaria cases	Malaria attributed deaths	Cases	Deaths	Lower	Point	Upper	Lower	Point	Upper
African	Algeria	38 934 334	N/A	N/A	0	8690	266	P+C	8690	266	203	50	260	-	-	0	0	(1)	(1b)	-	<50	-	-	0	-
	Angola	24 227 524	24 227 524	24 227 524	N/A	6 134 471	3 180 021	P+C	5 253 429	2 298 979	-	-	-	-	-	238 855	5714	(2)	(2)	2 000 000	3 400 000	5 100 000	8900	13 900	20 000
	Benin	10 598 482	10 598 482	10 598 482	N/A	1 955 773	1 509 221	P+C	1 490 787	1 044 235	-	-	-	434 110	86 323	90 545	1869	(2)	(2)	2 300 000	3 100 000	4 000 000	4400	6200	8200
	Botswana	2 219 937	1 471 781	93 513	N/A	1485	1485	P+C	-	1346	1346	-	-	-	-	152	22	(1)	(1b)	530	1000	2100	-	<10	-
	Burkina Faso	17 589 198	17 589 198	17 589 198	N/A	9 274 530	8 280 183	P+C	6 423 002	5 428 655	-	-	-	579 112	-	463 774	5632	(2)	(2)	4 700 000	7 100 000	10 000 000	12 000	17 000	32 000
	Burundi	10 816 860	10 816 860	10 816 860	N/A	7 622 162	4 831 758	P+C	7 375 677	4 585 273	-	-	-	155 630	141 026	153 468	2974	(2)	(2)	990 000	1 400 000	2 000 000	1700	3200	5600
	Cabo Verde	513 906	N/A	N/A	482 533	6894	46	P+C	6894	46	46	-	20	-	-	46	2	(1)	(1a)	-	<50	-	-	0	-
	Cameroon	22 773 014	22 773 014	16 168 840	N/A	3 709 906	1 369 518	P+C	2 340 388	-	-	-	-	0	0	471 209	4398	(2)	(2)	3 400 000	5 200 000	7 500 000	5200	9400	14 000
	Central African Republic	4 804 316	4 804 316	4 804 316	N/A	625 301	495 238	P+C	425 151	295 088	295 088	-	-	-	-	31 304	635	(2)	(2)	870 000	1 500 000	2 400 000	2700	3800	4900
	Chad	13 587 053	13 438 336	9 151 544	N/A	1 737 195	1 513 772	P+C	1 137 455	914 032	-	-	-	-	-	47 705	1720	(2)	(2)	710 000	1 900 000	3 300 000	3300	7800	11 000
	Comoros	769 991	769 991	366 364	N/A	103 545	2465	P+C	103 283	2203	2203	-	-	0	0	1049	0	(1)	(1b)	82 000	124 000	180 000	10	310	660
	Congo	4 504 962	4 504 962	4 504 962	N/A	290 346	248 159	P+C	108 510	66 323	66 323	-	-	0	0	25 454	271	(2)	(2)	500 000	820 000	1 200 000	300	1600	2300
	Côte d'Ivoire	22 157 107	22 157 107	22 157 107	N/A	6 418 571	4 658 774	P+C	5 472 628	3 712 831	-	-	-	-	55 015	68 262	2069	(2)	(2)	6 400 000	8 300 000	11 000 000	12 000	16 000	20 000
	Democratic Republic of the Congo	74 877 030	74 877 030	72 630 719	N/A	14 647 380	9 968 983	P+C	14 647 380	9 968 983	-	-	-	319 536	319 536	990 968	25 502	(2)	(2)	16 000 000	21 000 000	26 000 000	33 000	50 000	72 000
	Equatorial Guinea	820 885	820 885	820 885	N/A	57 129	20 417	P+C	57 129	20 417	17 452	-	-	-	-	-	-	(2)	(2)	68 000	168 000	290 000	160	340	440
	Eritrea	5 110 444	5 110 444	3 628 415	N/A	121 755	35 725	P+C	116 798	30 768	23 953	6780	-	19 766	19 766	3846	15	(1)	(1b)	42 000	74 000	120 000	10	130	270
	Ethiopia	96 958 732	65 931 937	26 372 775	N/A	7 457 765	2 513 863	P+C	7 062 717	2 118 815	1 250 110	868 705	-	-	-	32 761	213	(1)	(1b)	790 000	3 800 000	7 900 000	240	6700	19 000
	Gabon	1 687 673	1 687 673	1 687 673	N/A	256 183	185 996	P+C	102 087	31 900	26 117	-	-	0	0	28 017	159	(2)	(2)	110 000	350 000	630 000	96	370	510
	Gambia	1 928 201	1 928 201	1 928 201	N/A	603 424	166 229	P+C	603 424	166 229	99 976	-	-	2027	2027	5610	170	(1)	(2)	330 000	440 000	560 000	120	600	930
	Ghana	26 786 598	26 786 598	26 786 598	N/A	10 636 057	8 453 557	P+C	5 598 412	3 415 912	3 415 912	-	-	112 445	0	429 940	2200	(2)	(2)	5 800 000	8 300 000	11 000 000	5900	14 500	18 000
	Guinea	12 275 527	12 275 527	12 275 527	N/A	1 595 828	1 595 828	P+C	116 767	660 207	660 207	-	-	94 681	67 799	112 432	1067	(2)	(2)	3 800 000	4 800 000	6 000 000	7400	10 700	13 000
	Guinea-Bissau	1 800 513	1 800 513	1 800 513	N/A	309 939	98 952	P+C	304 418	93 431	-	-	-	-	-	13 146	357	(2)	(2)	70 000	197 000	370 000	160	680	990
	Kenya	44 863 583	44 863 583	31 491 950	N/A	15 142 723	9 655 905	P+C	8 295 749	2 808 931	2 808 931	-	-	-	-	20 988	472	(2)	(2)	3 800 000	6 500 000	11 000 000	2500	9900	12 000
	Liberia	4 396 554	4 396 554	4 396 554	N/A	2 433 086	1 066 107	P+C	2 231 183	864 204	864 204	-	-	17 406	17 020	28 300	2288	(2)	(2)	1 100 000	1 600 000	2 100 000	1200	2200	2900
	Madagascar	23 571 713	23 571 713	20 688 516	N/A	977 228	433 101	P+C	909 366	365 239	-	-	-	-	-	9180	551	(1)	(1b)	750 000	1 200 000	2 100 000	87	3200	7400
	Malawi	16 695 253	16 695 253	16 695 253	N/A	7 703 651	5 065 703	P+C	5 543 258	2 905 310	2 905 310	-	-	1 243 301	13 523	88 251	4490	(2)	(2)	2 700 000	3 500 000	4 500 000	2500	7800	11 000
	Mali	17 086 022	17 086 022	15 377 420	N/A	2 590 643	2 590 643	P+C	-	2 039 853	-	-	-	184 340	181 103	64 587	2309	(2)	(2)	5 900 000	7 300 000	8 800 000	15 000	20 000	25 000
	Mauritania	3 969 625	3 969 625	2 778 737	N/A	188 194	156 529	P+C	47 500	15 835	-	-	-	-	-	13 161	19	(1)	(2)	40 000	72 000	120 000	240	1100	1500
	Mayotte, France	228 070	N/A	N/A	59 136	15	15	C	-	15	13	1	14	-	-	7	0	-	-	-	-	-	-	-	-
	Mozambique	27 216 276	27 216 276	27 216 276	N/A	12 626 716	5 485 327	P+C	12 240 045	7 117 648	7 117 648	-	-	279 878	289 527	93 885	3245	(2)	(2)	7 200 000	9 300 000	12 000 000	9400	16 500	21 000
	Namibia	2 402 858	1 907 259	1 109 185	N/A	186 972	15 914	P+C	186 972	15 914	15 914	-	-	0	0	1474	61	(1)	(1a)	6800	8900	11 000	-	<50	-
	Niger	19 113 728	17 966 904	10 130 276	N/A	7 014 724	3 222 613	P+C	5 745 420	1 953 309	3 906 588	-	-	71 343	57 180	193 357	2691	(2)	(2)	2 700 000	4 900 000	7 900 000	7300	12 000	17 000
	Nigeria	177 475 986	177 475 986	135 552 389	N/A	19 555 575	16 512 127	P+C	10 870 402	7 826 954	-	-	-	-	-	929 026	6082	(2)	(2)	42 000 000	59 000 000	78 000 000	81 000	119 000	150 000
	Rwanda	11 341 544	11 341 544	11 341 544	N/A	4 178 206	1 610 812	P+C	4 178 206	1 610 812	1 623 176	-	-	109 313	109 092	11 138	496	(1)	(2)	1 100 000	1 300 000	1 700 000	400	3000	4600
	Sao Tome and Principe	186 342	186 342	186 342	N/A	91 445	1754	P+C	91 445	1754	1754	-	-	0	0	417	0	(1)	(1a)	12 000	17 000	25 000	-	<100	-
	Senegal	14 672 557	14 672 557	14 085 655	N/A	1 079 536	628 642	P+C	716 518	265 624	265 624	-	-	110 441	51 642	12 636	500	(1)	(2)	1 100 000	1 800 000	2 800 000	650	4200	6200
	Sierra Leone	6 315 627	6 315 627	6 315 627	N/A	2 647 375	1 898 852	P+C	2 122 999	1 374 476	1 374 476	-	-	454 840	97 908	18 556	2848	(2)	(2)	1 700 000	2 500 000	3 400 000	5700	7800	11 000
	South Africa	53 969 054	5 396 905	2 158 762	N/A	543 196	13 988	P+C	540 913	11 705	11 563	-	-	0	0	4928	174	(1)	(1a)	14 000	19 000	24 000	120	120	120
	South Sudan[1]	11 911 184	11 911 184	11 911 184	N/A	-	-	P+C	-	-	-	-	-	-	-	-	-	(1)	(2)	880 000	1 800 000	2 900 000	1500	2900	7200
	Swaziland	1 269 112	355 351	0	N/A	711	711	P+C	-	711	710	1	322	-	-	104	4	(1)	(1b)	450	620	890	-	<10	-
	Togo	7 115 163	7 115 163	7 115 163	N/A	1 756 700	1 130 251	P+C	1 756 700	1 130 251	1 130 234	-	-	394 088	394 088	33 546	1205	(2)	(2)	2 100 000	2 600 000	3 100 000	3100	4700	5900
	Uganda	37 782 971	37 782 971	37 782 971	N/A	19 201 136	13 724 345	P+C	9 108 730	3 631 939	3 631 939	-	-	0	0	621 737	5921	(2)	(2)	4 400 000	8 100 000	12 000 000	5300	12 500	17 000

WHO region	Country/ area	Population				Reported malaria cases										Inpatient malaria cases and deaths		Method used to calulate[3]		Estimates, 2013					
																				Cases			Deaths		
		UN population	At risk (low + high)	At risk (high)	Number of people living in active foci	Suspected malaria cases	Presumed and confirmed malaria cases	Malaria case definition	Mic. slides/ RDTs performed	Mic. slides/ RDTs positive	Mic. slides/ RDTs *P. falciparum* (incl. mixed cases)	Mic. slides/ RDTs *P. vivax*	Imported cases / (introduced cases)	Presumed and confirmed cases at community level	RDT positive cases at community level	Inpatient malaria cases	Malaria attributed deaths	Cases	Deaths	Lower	Point	Upper	Lower	Point	Upper
African	United Republic of Tanzania	51 822 621	51 822 621	51 254 941	N/A	25 190 092	7 403 562	P+C	18 467 337	680 807	107 883	-	-	-	-	212 854	5373	(2)	(2)	4 200 000	5 700 000	7 300 000	3300	16 500	23 000
	Mainland	50 356 338	50 356 338	50 356 338	N/A	24 880 179	7 399 316	P+C	18 159 070	678 207	106 609	-	-	-	-	212 562	5368	(2)	(2)	-	-	-	-	0	-
	Zanzibar	1 466 283	1 466 283	898 603	N/A	309 913	4246	P+C	308 267	2600	1274	-	-	0	0	292	5	(2)	(2)	-	-	-	-	0	-
	Zambia	15 721 343	15 721 343	15 721 343	N/A	7 859 740	5 972 933	P+C	5 964 354	4 077 547	-	-	-	-	-	153 009	3257	(2)	(2)	2 500 000	3 300 000	4 100 000	1800	6700	9200
	Zimbabwe	15 245 855	12 004 995	4 362 761	N/A	1 420 946	535 983	P+C	1 420 894	535 931	535 931	-	-	36 961	12 345	7689	406	(1)	(1b)	640 000	1 000 000	1 600 000	71	2650	5700
Region of the Americas	Argentina	42 980 026	N/A	N/A	N/A	5691	4	C	5691	4	-	4	4	-	-	0	0	(1)	(1a)	-	0	-	-	0	-
	Belize	351 706	N/A	N/A	8589	24 122	19	C	24 122	19	-	19	0	-	-	0	0	(1)	(1a)	-	<50	-	-	0	-
	Bolivia (Plurinational State of)	10 561 887	4 791 623	263 876	N/A	124 900	7401	C	124 900	7401	341	7060	-	0	-	-	1	(1)	(1b)	7800	10 600	20 000	-	<10	-
	Brazil	206 077 898	41 833 813	4 739 792	N/A	1 670 019	143 415	C	1 670 019	143 415	24 654	118 724	-	0	0	1756	36	(1)	(1a)	200 000	230 000	260 000	-	<50	-
	Colombia	47 791 393	10 625 813	2 154 165	N/A	403 532	40 768	C	403 532	40 768	20 634	20 129	-	0	-	286	17	(1)	(1b)	57 000	79 000	100 000	-	<100	-
	Costa Rica	4 757 606	N/A	N/A	0	4420	6	C	4420	6	3	2	5	-	-	0	0	(1)	(1a)	-	<10	-	-	0	-
	Dominican Republic	10 405 943	5 013 521	96 205	N/A	416 729	496	C	416 729	496	491	5	-	0	-	169	4	(1)	(1b)	650	800	980	-	<10	-
	Ecuador	15 902 916	N/A	N/A	N/A	370 825	241	C	370 825	241	49	199	-	-	-	-	-	(1)	(1a)	380	400	450	0	0	-
	El Salvador	6 107 706	N/A	N/A	92 717	106 915	8	C	106 915	8	-	8	2	-	-	3	0	(1)	(1a)	-	<10	-	-	0	-
	French Guiana, France	261 466	261 466	223 553	N/A	14 651	448	C	14 651	448	348	98	-	-	-	55	0	(1)	(1b)	940	1500	3400	-	<10	-
	Guatemala	16 015 494	12 288 545	3 987 658	N/A	314 294	4931	C	314 294	4931	92	4839	-	-	-	-	1	(1)	(1b)	6600	10 400	23 000	-	<10	-
	Guyana	763 893	710 420	267 363	N/A	142 843	12 354	C	142 843	12 354	5140	7173	-	-	-	56	11	(1)	(1b)	45 000	63 000	90 000	10	100	190
	Haiti	10 572 029	10 572 029	5 603 175	N/A	258 817	17 696	C	258 783	17 662	17 662	-	-	-	-	375	9	(1)	(1b)	62 000	109 000	170 000	10	280	600
	Honduras	7 961 680	5 045 601	371 191	N/A	151 420	3380	C	151 420	3380	601	2881	-	-	-	-	2	(1)	(1b)	8200	11 000	15 000	-	<10	-
	Mexico	125 385 833	N/A	N/A	3 445 972	900 578	664	C	900 578	664	6	658	8	-	-	0	0	(1)	(1a)	500	540	610	-	<10	-
	Nicaragua	6 013 913	3 018 984	78 181	N/A	620 977	1163	C	620 977	1163	163	1000	-	0	0	163	0	(1)	(1b)	1900	2400	3000	-	<10	-
	Panama	3 867 535	181 284	170 172	N/A	80 701	874	C	80 701	874	8	866	-	-	-	24	0	(1)	(1a)	740	830	890	0	0	-
	Paraguay	6 552 518	N/A	N/A	497 042	24 832	8	C	24 832	8	7	1	8	-	-	1	0	(1)	(1a)	-	0	-	-	0	-
	Peru	30 973 148	12 165 089	1 550 406	N/A	866 047	64 676	C	866 047	64 676	10 282	54 394	-	-	-	-	4	(1)	(1a)	75 000	95 000	120 000	-	<10	-
	Suriname	538 248	84 505	84 505	N/A	26 964	400	C	26 938	374	216	158	-	-	-	6	0	(1)	(1a)	780	1100	2000	-	<10	-
	Venezuela (Bolivarian Republic of)	30 693 827	5 770 439	798 040	N/A	522 617	90 708	C	522 617	90 708	27 843	62 850	-	0	-	-	5	(1)	(1b)	86 000	132 000	310 000	20	150	350
Eastern Mediterranean	Afghanistan	31 627 506	23 902 611	8 511 708	N/A	743 183	290 079	P+C	514 466	61 362	3000	58 362	-	73 944	22 558	4971	32	(1)	(1b)	180 000	250 000	350 000	46	120	210
	Djibouti	876 174	438 087	0	N/A	-	9439	P+C	39 276	9439	-	-	-	-	-	1171	28	(2)	(1b)	1000	5400	17 000	-	<50	-
	Iran (Islamic Republic of)	78 143 644	N/A	N/A	606 499	-	1243	C	468 513	1243	134	1109	867 /(7)	-	-	77	0	(1)	(1a)	530	570	640	-	<10	-
	Pakistan	185 044 286	181 918 666	53 509 117	N/A	8 514 341	3 666 257	P+C	5 123 233	275 149	42 817	232 332	-	0	0	30 164	56	(1)	(1b)	1 000 000	1 500 000	2 100 000	250	1100	2000
	Saudi Arabia	30 886 545	N/A	N/A	41 404	-	2305	C	1 249 752	2305	1155	1144	2254 /(21)	-	-	51	0	(1)	(1a)	-	<50	-	-	0	-
	Somalia	10 517 569	10 517 569	5 353 161	N/A	79 653	26 174	P+C	64 480	11 001	-	-	-	0	0	1285	14	(2)	(1b)	310 000	690 000	1 300 000	42	2000	4800
	Sudan	39 350 274	39 350 274	34 195 388	N/A	1 207 771	1 207 771	P+C	788 281	1 068 506	-	-	-	-	-	135 132	823	(2)	(1b)	940 000	1 300 000	1 800 000	120	3300	6500
	Yemen	26 183 676	20 394 487	6 561 894	N/A	725 169	97 089	P+C	695 593	67 513	67 274	239	-	-	-	495	19	(1)	(1b)	290 000	460 000	710 000	35	1100	2500
European	Azerbaijan	9 629 779	N/A	N/A	0	399 925	2	C	399 925	2	2	-	2	-	-	2	0	(1)	(1a)	-	0	-	-	0	-
	Georgia	4 034 774	N/A	N/A	0	440	6	C	440	6	6	-	6	-	-	6	0	(1)	(1a)	-	0	-	-	0	-
	Kyrgyzstan	5 843 617	N/A	N/A	0	35 600	0	C	35 600	0	-	-	0	-	-	0	0	(1)	(1a)	-	0	-	-	0	-
	Tajikistan	8 295 840	N/A	N/A	612 596	200 241	7	C	200 241	7	-	7	5	-	-	0	0	(1)	(1a)	-	<10	-	-	0	-
	Turkey[2]	77 523 788	N/A	N/A	0	189 854	249	C	189 854	249	204	41	244 /(5)	-	-	-	1	(1)	(1a)	-	<50	-	-	0	-
	Uzbekistan	29 469 913	N/A	N/A	0	812 347	1	C	812 347	1	1	-	1	-	-	1	0	(1)	(1a)	-	0	-	-	0	-

WHO region	Country/ area	Population				Reported malaria cases										Inpatient malaria cases and deaths		Method used to calulate[3]		Estimates, 2013					
																				Cases			Deaths		
		UN population	At risk (low + high)	At risk (high)	Number of people living in active foci	Suspected malaria cases	Presumed and confirmed malaria cases	Malaria case definition	Mic. slides/ RDTs performed	Mic. slides/ RDTs positive	Mic. slides/ RDTs *P. falciparum* (incl. mixed cases)	Mic. slides/ RDTs *P. vivax*	Imported cases / (introduced cases)	Presumed and confirmed cases at community level	RDT positive cases at community level	Inpatient malaria cases	Malaria attributed deaths	Cases	Deaths	Lower	Point	Upper	Lower	Point	Upper
South-East Asia	Bangladesh	159 077 513	16 480 430	4 231 462	N/A	125 201	10 216	P+C	125 201	10 216	9727	489	-	47 264	36 885	2062	45	(1)	(1b)	500 000	700 000	1 000 000	69	1600	3200
	Bhutan	765 008	N/A	N/A	121 441	28 716	48	P+C	28 716	48	17	31	29	-	-	-	0	(1)	(1a)	-	<50	-	-	0	-
	Democratic People's Republic of Korea	25 026 772	N/A	N/A	11 684 511	38 878	11 212	P+C	38 201	10 535	-	10 535	0	0	0	0	0	(1)	(1a)	15 000	16 000	18 000	0	0	-
	India	1 295 291 5410	1178 715 3010	181 340 816	N/A	138 628 331	1 102 205	C	138 628 331	1 102 205	722 546	379 659	-	-	-	-	561	(1)	(1b)	10 000 000	17 000 000	26 000 000	2300	26 000	55 000
	Indonesia	254 454 778	66 484 155	29 945 525	N/A	1 575 907	252 027	C	1 550 296	252 027	142 807	107 260	-	0	0	252 027	64	(1)	(1b)	3 200 000	4 100 000	5 300 000	540	6600	12 000
	Myanmar	53 437 159	31 804 541	8 448 712	N/A	890 913	152 195	P+C	890 913	152 195	110 324	41 866	-	53 463	53 405	10 444	92	(1)	(1b)	680 000	1 200 000	1 900 000	120	2300	5000
	Nepal	28 174 724	13 509 780	1 022 742	N/A	296 979	122 874	P+C	175 574	1469	315	1154	-	-	-	-	0	(1)	(1b)	10 000	14 000	22 000	-	<10	-
	Sri Lanka	20 618 991	N/A	N/A	0	1 069 817	49	C	1 069 817	49	20	28	49	-	-	47	0	(1)	(1a)	-	0	-	-	0	-
	Thailand	67 725 979	33 862 990	5 418 078	N/A	1 756 528	37 921	C	1 756 528	37 921	14 331	20 513	-	-	3297	1533	38	(1)	(1a)	37 000	127 000	390 000	-	<50	-
	Timor-Leste	1 157 360	1 038 282	389 732	N/A	117 107	342	P+C	117 107	342	203	139	-	64	64	5	1	(1)	(1b)	37 000	90 000	120 000	10	130	270
Western Pacific	Cambodia	15 328 136	10 839 973	7 376 802	N/A	142 242	26 278	P+C	141 116	25 152	14 796	10 356	-	29 993	29 993	3725	18	(1)	(1b)	62 000	77 000	95 000	10	120	220
	China	1377 240 4510	575 984 744	196 134	N/A	4 403 633	2921	P+C	4 403 633	2921	1855	850	2864	-	-	170	24	(1)	(1b)	4300	4800	5200	-	<50	-
	Lao People's Democratic Republic	6 689 300	6 194 945	2 089 861	N/A	294 542	48 071	P+C	294 542	48 071	25 445	22 625	-	11 552	11 571	417	4	(1)	(1b)	72 000	93 000	120 000	10	180	340
	Malaysia	29 901 997	N/A	N/A	1 300 150	1 443 958	3923	C	1 443 958	3923	409	732	766 /(8)	-	-	3331	9	(1)	(1a)	3000	3300	3600	-	<50	-
	Papua New Guinea	7 463 577	7 463 577	7 015 762	N/A	922 417	644 688	S	558 911	281 182	200 215	78 846	-	63 024	32 850	8749	203	(1)	(1b)	800 000	1 300 000	2 000 000	110	3100	6900
	Philippines	99 138 690	60 457 356	6 534 558	N/A	314 820	4903	C	314 820	4903	3995	834	-	1184	1184	525	10	(1)	(1b)	12 000	16 000	21 000	-	<50	-
	Republic of Korea	50 074 401	N/A	N/A	6 895 283	638	638	C	-	638	55	579	78	-	-	344	0	(1)	(1a)	390	420	470	0	0	-
	Solomon Islands	572 171	566 449	566 449	N/A	233 803	51 649	P+C	200 558	18 404	10 559	7845	-	0	0	994	23	(1)	(1b)	35 000	42 000	49 000	-	<50	-
	Vanuatu	258 883	258 883	225 034	N/A	35 570	982	C	35 570	982	279	703	-	332	332	9	0	(1)	(1b)	5800	7900	10 000	-	<10	-
	Viet Nam	92 423 338	68 114 964	6 282 484	N/A	2 786 135	27 868	P+C	2 774 019	15 752	8532	7220	-	18 675	-	7086	6	(1)	(1b)	20 000	23 000	27 000	-	<50	-

Regional summary	Population				Reported malaria cases										Inpatient malaria cases and deaths		Method used to calulate[3]		Estimates, 2013					
																			Cases			Deaths		
	UN Population	At risk (low + high)	At risk (high)	Number of people living in active foci	Suspected malaria cases	Presumed and confirmed malaria cases	Malaria case definition	Mic. slides/ RDTs performed	Mic. slides/ RDTs positive	Mic. slides/ RDTs *P. falciparum* (incl. mixed cases)	Mic. slides/ RDTs *P. vivax*	Imported cases / (Introduced cases)	Presumed and confirmed cases at community level	RDT positive cases at community level	Inpatient malaria cases	Malaria attributed deaths	Cases	Deaths	Lower	Point	Upper	Lower	Point	Upper
African	960 115 328	834 146 157	696 082 864	541 669	205 962 939	126 256 273		149 193 017	74 090 708	32 160 834	875 537	616	4 619 218	1 914 920	5 727 373	97 381			130 000 000	188 000 000	258 000 000	240 000	400 000	560 000
Region of the Americas	584 536 665	112 363 133	20 388 281	4 044 320	7 051 894	389 660		7 051 834	389 600	108 540	281 068	27	0	0	2894	90			550 000	750 000	1 120 000	40	500	1 100
Eastern Mediterranean	402 629 674	276 521 695	108 131 267	647 903	11 309 393	5 300 357		8 943 594	1 496 518	114 380	293 186	3121	73 944	22 558	173 346	972			2 700 000	4 200 000	6 300 000	500	7 600	16 000
European	134 797 711	N/A	N/A	612 596	1 638 407	265		1 638 407	265	213	48	258	0	0	9	1			-	<50	-	-	0	-
South-East Asia	1 905 729 827	1 341 895 483	230 797 067	11 805 952	144 528 377	1 689 089		144 380 684	1 567 007	1 000 290	561 674	78	100 791	93 651	266 118	801			14 500 000	23 200 000	34 800 000	3 000	36 600	75 500
Western Pacific	1 679 090 946	729 880 892	30 287 084	8 195 433	10 577 758	811 921		10 167 127	401 928	266 140	130 590	3708	124 760	75 930	25 350	297			1 000 000	1 600 000	2 300 000	100	3 400	7 500
Total	**5 666 900 151**	**3 294 807 360**	**1 085 686 563**	**25 847 873**	**381 068 768**	**134 447 565**		**321 374 663**	**77 946 026**	**33 650 397**	**2 142 103**	**7808**	**4 918 713**	**2 107 059**	**6 195 090**	**99 542**			**148 000 000**	**218 000 000**	**302 000 000**	**240 000**	**450 000**	**660 000**

RDT, rapid diagnostic test

C=Confirmed P=Presumed S=Suspected

1 South Sudan became an independent State on 9 July 2011 and a Member State of WHO on 27 September 2011. South Sudan and Sudan have distinct epidemiological profiles comprising high-transmission and low-transmission areas respectively. For this reason data up to June 2011 from the high-transmission areas of Sudan (10 southern states which correspond to South Sudan) and low-transmission areas (15 northern states which correspond to contemporary Sudan) are reported separately.

2 All cases were introduced

3 Method used to estimate

Cases: (1) Estimated from reported confirmed cases, (2) Estimated from parasite prevalence surveys

Deaths:(1a) Estimated from reported deaths, (1b) Estimated by applying case fatality rate to estimated cases, (2) Modelled from verbal autopsy data

Annex 6B – Reported malaria cases by method of confirmation, 2000–2014

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African	Algeria	Presumed and confirmed	541	435	307	427	163	299	117	288	196	94	408	191	887	603	266
		Microscopy examined	27 733	26 411	18 803	17 059	16 686	18 392	13 869	14 745	11 964	15 635	12 224	11 974	15 790	12 762	8690
		Confirmed with microscopy	541	435	307	427	163	299	117	288	196	94	408	191	887	603	266
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	506	427	299	421	160	297	116	261	192	90	396	187	828	587	260
	Angola	Presumed and confirmed	2 080 348	1 249 767	1 862 662	3 246 258	2 489 170	2 329 316	2 283 097	2 726 530	3 432 424	3 726 606	3 687 574	3 501 953	3 031 546	3 144 100	3 180 021
		Microscopy examined	–	–	–	–	–	–	–	1 458 123	2 118 053	2 172 036	1 947 349	1 765 933	2 245 223	3 025 258	3 398 029
		Confirmed with microscopy	–	–	–	–	–	889 572	1 029 198	1 295 535	1 106 534	1 120 410	1 324 264	1 147 473	1 056 563	1 462 941	1 431 313
		RDT examined	–	–	–	–	–	–	106 801	506 756	541 291	906 916	639 476	833 753	1 069 483	1 103 815	1 855 400
		Confirmed with RDT	–	–	–	–	–	–	53 200	237 950	271 458	453 012	358 606	484 809	440 271	536 927	867 666
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Benin	Presumed and confirmed	–	717 290	782 818	819 256	853 034	803 462	861 847	1 171 522	1 147 005	1 256 708	1 432 095	1 424 335	1 513 212	1 670 273	1 509 221
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	–	88 134	243 008	291 479	155 205
		Confirmed with microscopy	–	–	–	–	–	–	–	–	–	534 590	–	68 745	–	99 368	108 714
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	475 986	825 005	1 158 526	1 335 582
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	355 007	–	354 223	705 839	979 466	935 521
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Botswana	Presumed and confirmed	71 555	48 281	28 907	23 657	22 404	11 242	23 514	16 983	17 886	14 878	12 196	1141	308	506	1485
		Microscopy examined	–	–	–	–	–	–	–	14 200	23 253	17 553	–	–	–	–	–
		Confirmed with microscopy	–	–	–	–	–	–	–	381	914	951	1046	432	–	–	–
		RDT examined	–	–	–	–	–	–	–	113	941	1053	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	9	13	73	–	–	193	456	1346
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Burkina Faso	Presumed and confirmed	–	352 587	1 188 870	1 443 184	1 546 644	1 615 695	2 060 867	2 487 633	3 790 238	4 537 600	5 723 481	5 024 697	6 970 700	7 146 026	8 280 183
		Microscopy examined	–	30 006	32 796	31 256	52 874	73 262	122 047	127 120	138 414	137 632	177 879	400 005	223 372	183 971	198 947
		Confirmed with microscopy	–	–	–	–	18 256	21 335	44 265	44 246	36 514	59 420	88 540	83 857	90 089	82 875	83 259
		RDT examined	–	–	–	–	–	–	–	–	–	182 658	940 985	450 281	4 516 273	4 296 350	6 224 055
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	123 107	715 999	344 256	3 767 957	3 686 176	5 345 396
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Burundi	Presumed and confirmed	3 252 692	3 345 881	2 626 149	2 243 185	1 749 892	2 334 067	2 265 970	2 079 861	1 950 266	2 588 830	4 255 301	3 298 979	2 570 754	4 469 007	4 831 758
		Microscopy examined	484 249	508 558	530 019	600 369	608 017	903 942	1 034 519	1 411 407	1 161 153	1 537 768	2 825 558	2 859 720	2 659 372	4 123 012	4 471 998
		Confirmed with microscopy	308 095	312 015	327 138	353 459	363 395	327 464	649 756	860 606	690 748	893 314	1 599 908	1 485 332	1 484 676	2 366 134	2 718 391
		RDT examined	–	–	–	–	–	–	251 925	406 738	330 915	472 341	273 324	181 489	1 148 965	2 933 869	2 903 679
		Confirmed with RDT	–	–	–	–	–	–	141 975	241 038	185 993	292 308	163 539	86 542	666 400	1 775 253	1 866 882
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Cabo Verde	Presumed and confirmed	144	107	76	68	45	68	80	18	35	65	47	36	36	46	46
		Microscopy examined	6843	7141	8022	6001	9833	7902	6979	7402	7033	–	–	–	8715	10 621	6894
		Confirmed with microscopy	144	107	76	68	45	68	80	18	35	65	47	–	36	46	46
		RDT examined	–	–	–	–	–	–	1750	1500	2000	21 913	–	26 508	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	36	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	29	35	24	20
	Cameroon	Presumed and confirmed	–	–	–	–	–	277 413	634 507	604 153	1 650 749	1 883 199	1 845 691	1 829 266	1 589 317	1 824 633	1 369 518
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	–	1 110 308	1 182 610	1 236 306	1 086 095
		Confirmed with microscopy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	120 466	93 392	591 670	1 254 293
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Central African Republic	Presumed and confirmed	89 614	140 742	43 093	78 094	129 367	131 856	114 403	119 477	152 260	175 210	66 484	221 980	459 999	407 131	495 238
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	–	–	–	63 695	55 943
		Confirmed with microscopy	–	–	–	–	–	–	–	–	–	–	–	–	–	36 943	41 436
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	55 746	136 548	369 208
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	46 759	79 357	253 652
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Chad	Presumed and confirmed	437 041	451 182	517 004	505 732	481 122	501 846	251 354	518 832	478 987	549 048	544 243	528 454	660 575	1 272 841	1 513 772
		Microscopy examined	45 283	43 180	44 689	54 381	1525	37 439	62 895	64 884	64 171	74 791	89 749	–	69 789	–	–
		Confirmed with microscopy	40 078	38 287	43 933	45 195	1360	31 668	45 155	48 288	47 757	–	75 342	86 348	–	206 082	160 260
		RDT examined	–	–	–	–	–	–	–	–	–	–	309 927	114 122	–	621 469	1 137 455
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	125 106	94 778	–	548 483	753 772
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African		Presumed and confirmed	801 784	879 032	1 104 310	867 398	43 918	29 554	54 830	53 511	46 426	57 084	103 670	76 661	65 139	62 565	2465
		Microscopy examined	–	–	–	–	–	–	–	–	–	13 387	87 595	63 217	125 030	154 824	93 444
	Comoros	Confirmed with microscopy	–	–	–	–	12 874	6086	20 559	–	–	5982	35 199	22 278	45 507	46 130	1987
		RDT examined	–	–	–	–	–	–	–	–	–	–	5249	20 226	27 714	21 546	9839
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	1339	2578	4333	7026	216
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	15 751	11 981	7677	1633	293	67	157 757	149 552	157 125	150 583	446 656	277 263	120 319	183 026	248 159
		Microscopy examined	–	–	–	–	–	–	–	163 924	203 869	203 160	–	–	–	69 375	88 764
	Congo	Confirmed with microscopy	–	–	–	–	–	–	–	103 213	117 291	92 855	–	37 744	120 319	43 232	54 523
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	0	19 746
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	0	11 800
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	1 193 288	1 109 751	1 136 810	1 275 138	1 280 914	1 253 408	1 277 670	1 343 654	1 847 366	1 721 461	2 588 004	2 795 919	4 708 425	4 658 774
		Microscopy examined	–	–	–	–	–	–	–	–	19 661	34 755	–	49 828	195 546	395 914	568 562
	Côte d'Ivoire	Confirmed with microscopy	–	–	–	–	–	–	–	–	3527	7388	62 726	29 976	107 563	215 104	306 926
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	1 572 785	3 384 765	4 904 066
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	1 033 064	2 291 849	3 405 905
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	964 623	2 199 247	2 640 168	4 386 638	4 133 514	6 334 608	5 008 959	3 720 570	4 933 845	7 839 435	9 252 959	9 442 144	9 128 398	11 363 817	9 968 983
		Microscopy examined	3758	3244	3704	4820	5320	5531	4779	1 181 323	2 613 038	2 956 592	3 678 849	4 226 533	4 329 318	4 126 129	3 533 165
	Democratic Republic of the Congo	Confirmed with microscopy	897	1531	1735	2438	2684	2971	2050	740 615	1 618 091	1 873 816	2 374 930	2 700 818	2 656 864	2 611 478	2 126 554
		RDT examined	–	–	–	–	–	–	–	2275	428	12 436	54 728	2 912 088	3 327 071	6 096 993	11 114 215
		Confirmed with RDT	–	–	–	–	–	–	–	243	127	4889	42 850	1 861 163	2 134 734	4 103 745	7 842 429
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	–	–	–	–	–	–	20 948	67 196	84 532	78 095	37 267	20 890	25 162	20 417
		Microscopy examined	–	–	–	–	–	–	–	10 752	11 815	15 960	42 585	23 004	33 245	27 039	47 322
	Equatorial Guinea	Confirmed with microscopy	–	–	–	–	–	–	–	5842	7883	11 603	39 636	20 601	13 196	11 235	17 685
		RDT examined	–	–	–	–	–	–	–	655	2572	3773	16 772	2899	6826	5489	9807
		Confirmed with RDT	–	–	–	–	–	–	–	445	1620	2581	14 177	1865	1973	1894	2732
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	125 746	74 861	65 517	27 783	24 192	10 148	19 568	10 572	21 298	53 750	39 567	42 178	34 678	35 725
		Microscopy examined	–	22 637	52 228	52 428	41 361	48 937	46 096	68 905	54 075	68 407	79 024	67 190	84 861	81 541	63 766
	Eritrea	Confirmed with microscopy	–	9716	6078	10 346	4119	9073	6541	9528	4364	6633	13 894	15 308	11 557	10 890	10 993
		RDT examined	–	–	–	–	–	–	–	7520	6566	–	–	25 570	33 758	39 281	53 032
		Confirmed with RDT	–	–	–	–	–	–	–	6037	4400	5126	22 088	19 540	10 258	10 427	19 775
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	2 555 314	2 929 684	3 582 097	5 170 614	3 901 957	3 038 565	2 557 152	2 532 645	3 043 203	4 068 764	3 549 559	3 876 745	3 316 013	2 513 863
		Microscopy examined	–	851 942	1 115 167	1 010 925	1 312 422	1 364 194	785 209	739 627	986 323	2 065 237	2 509 543	3 418 719	3 778 479	8 573 335	7 062 717
	Ethiopia	Confirmed with microscopy	–	392 377	427 795	463 797	578 904	538 942	447 780	451 816	458 561	927 992	1 158 197	1 480 306	1 692 578	2 645 454	2 118 815
		RDT examined	–	–	–	–	–	–	–	–	–	262 877	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	108 324	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	127 024	132 918	157 440	166 321	200 214	235 479	111 527	190 749	187 714	113 803	185 105	178 822	188 089	185 196	185 996
		Microscopy examined	–	–	–	–	100 107	129 513	136 916	142 406	151 137	1623	54 714	–	66 018	90 185	90 275
	Gabon	Confirmed with microscopy	50 810	53 167	62 976	58 212	70 075	70 644	33 458	45 186	40 701	660	12 816	–	18 694	26 432	27 687
		RDT examined	–	–	–	–	–	–	–	–	–	–	7887	–	4129	10 132	11 812
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	1120	–	1059	2550	4213
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	481 590	620 767	540 165	395 043	329 426	427 598	439 798	508 846	479 409	194 009	261 967	300 363	279 829	166 229
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	290 842	172 241	156 580	236 329	286 111
	Gambia	Confirmed with microscopy	–	–	–	–	–	–	–	–	39 164	50 378	52 245	71 588	29 325	65 666	66 253
		RDT examined	–	–	–	–	–	–	–	–	–	–	123 564	–	705 862	614 128	317 313
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	64 108	190 379	271 038	175 126	99 976
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	3 349 528	3 044 844	3 140 893	3 552 896	3 416 033	3 452 969	3 511 452	3 123 147	3 200 147	3 694 671	3 849 536	4 154 261	10 676 731	7 200 797	8 453 557
		Microscopy examined	–	–	–	–	–	–	–	–	1 100 238	2 431 048	2 031 674	1 172 838	4 219 097	1 394 249	1 987 959
	Ghana	Confirmed with microscopy	–	–	–	–	475 441	655 093	472 255	476 484	956 359	962 599	1 029 384	624 756	2 971 699	721 898	970 448
		RDT examined	–	–	–	–	–	–	–	–	143 879	468 449	247 278	781 892	1 438 284	1 488 822	3 610 453
		Confirmed with RDT	–	–	–	–	–	0	0	–	138 124	141 771	42 253	416 504	783 467	917 553	2 445 464
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African		Presumed and confirmed	816 539	851 877	850 147	731 911	876 837	850 309	834 835	888 643	657 003	812 471	1 092 554	1 189 016	1 220 574	775 341	1 595 828
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	–	43 549	–	–	116 767
	Guinea	Confirmed with microscopy	4800	6238	16 561	107 925	103 069	50 452	41 228	28 646	33 405	20 932	20 936	5450	191 421	63 353	82 818
		RDT examined	–	–	–	–	–	–	16 554	21 150	–	20 866	–	139 066	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	12 999	15 872	–	14 909	–	90 124	125 779	147 904	577 389
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	246 316	202 379	194 976	162 344	187 910	185 493	148 720	140 205	148 542	156 633	140 143	174 986	129 684	132 176	98 952
		Microscopy examined	–	–	–	–	–	33 721	34 862	34 384	31 083	25 379	48 799	57 698	61 048	58 909	106 882
	Guinea-Bissau	Confirmed with microscopy	–	–	–	–	–	14 659	15 120	14 284	11 299	11 757	30 239	21 320	23 547	17 733	35 546
		RDT examined	–	–	–	–	–	–	–	–	–	–	56 455	139 531	97 047	102 079	197 536
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	20 152	50 662	26 834	36 851	57 885
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	4 216 531	3 262 931	3 319 399	5 338 008	7 545 541	9 181 224	8 926 058	9 610 691	839 903	8 123 689	6 071 583	11 120 812	9 335 951	9 750 953	9 655 905
		Microscopy examined	–	–	43 643	96 893	59 995	–	–	–	–	–	2 384 402	3 009 051	4 836 617	6 606 885	7 444 865
	Kenya	Confirmed with microscopy	–	–	20 049	39 383	28 328	–	–	–	839 903	–	898 531	1 002 805	1 426 719	2 060 608	2 415 950
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	164 424	655 285	850 884
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	26 752	274 678	392 981
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	–	–	–	–	44 875	1 171 175	694 428	726 905	1 035 940	2 675 816	2 480 748	1 800 372	1 483 676	1 066 107
		Microscopy examined	–	–	–	–	–	8718	165 095	123 939	238 752	327 392	335 973	728 443	772 362	818 352	1 318 801
	Liberia	Confirmed with microscopy	–	–	–	–	–	5025	115 677	80 373	157 920	212 657	212 927	577 641	507 967	496 269	302 708
		RDT examined	–	–	–	–	–	57 325	880 952	508 987	635 855	676 569	998 043	1 593 676	1 276 521	1 144 405	912 382
		Confirmed with RDT	–	–	–	–	–	39 850	645 738	411 899	449 032	626 924	709 246	1 338 121	899 488	747 951	561 496
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	1 392 483	1 386 291	1 598 919	2 198 297	1 458 408	1 229 385	1 087 563	736 194	352 870	299 094	293 910	255 814	395 149	387 045	433 101
		Microscopy examined	31 575	33 354	27 752	37 333	39 174	37 943	29 318	30 921	30 566	23 963	24 393	34 813	38 453	41 316	35 840
	Madagascar	Confirmed with microscopy	6946	8538	5272	6909	7638	6753	5689	4823	4096	2720	2173	3447	3667	4550	3620
		RDT examined	–	–	–	–	–	–	–	175 595	299 000	610 035	604 114	739 572	906 080	1 029 994	873 526
		Confirmed with RDT	–	–	–	–	–	–	–	43 674	89 138	212 390	200 277	221 051	355 753	382 495	361 619
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	3 646 212	3 823 796	2 784 001	3 358 960	2 871 098	3 688 389	4 498 949	4 786 045	5 185 082	6 183 816	6 851 108	5 338 701	4 922 596	3 906 838	5 065 703
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	–	119 996	406 907	132 475	198 534
	Malawi	Confirmed with microscopy	–	–	–	–	–	–	–	–	–	–	–	50 526	283 138	44 501	77 635
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	580 708	2 763 986	3 029 020	5 344 724
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	253 973	1 281 846	1 236 391	2 827 675
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	546 634	612 896	723 077	809 428	1 969 214	962 706	1 022 592	1 291 853	1 045 424	1 633 423	2 171 542	1 961 070	2 171 739	2 327 385	2 590 643
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Mali	Confirmed with microscopy	–	–	–	–	–	–	–	–	–	–	–	–	97 995	190 337	219 637
		RDT examined	–	–	–	–	–	–	–	–	–	–	1 380 178	974 558	–	1 889 286	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	227 482	307 035	788 487	1 176 881	1 820 216
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	243 942	224 614	318 120	224 840	223 472	188 025	222 476	201 044	174 820	244 319	154 003	169 104	128 486	156 529
		Microscopy examined	–	–	–	–	–	–	31 013	–	835	3717	5449	3752	1865	5510	–
	Mauritania	Confirmed with microscopy	–	–	–	–	–	–	1061	–	268	603	909	1130	255	957	–
		RDT examined	–	–	–	–	–	–	–	–	720	4338	2299	7991	3293	3576	47 500
		Confirmed with RDT	–	–	–	–	–	–	–	–	34	337	1085	1796	1633	630	15 835
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	–	–	–	792	743	500	392	421	346	352	396	92	72	82	15
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	2023	1214	1463	–	–
	Mayotte, France	Confirmed with microscopy	–	–	–	792	743	500	392	421	346	352	396	92	72	82	15
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	74	129	148	250	236	51	47	71	14
		Presumed and confirmed	–	–	–	–	–	–	–	6 155 082	4 831 491	4 310 086	3 381 371	3 344 413	3 203 338	3 924 832	5 485 327
		Microscopy examined	–	–	–	–	–	–	–	–	–	–	1 950 933	2 504 720	2 546 213	2 058 998	2 295 823
	Mozambique	Confirmed with microscopy	–	–	–	–	–	–	–	141 663	120 259	93 874	644 568	1 093 742	886 143	774 891	1 009 496
		RDT examined	–	–	–	–	–	–	–	–	–	–	2 287 536	2 966 853	2 234 994	5 215 893	9 944 222
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	878 009	663 132	927 841	2 223 983	6 108 152
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African		Presumed and confirmed	-	538 512	445 803	468 259	610 799	339 204	265 595	172 024	132 130	87 402	25 889	14 406	3163	4911	15 914
		Microscopy examined	-	-	-	-	-	-	-	-	24 361	16 059	14 522	13 262	7875	1507	1894
	Namibia	Confirmed with microscopy	-	41 636	23 984	20 295	36 043	23 339	27 690	4242	1092	505	556	335	194	136	222
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	48 599	-	32 495	185 078
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	1525	-	4775	15 692
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	-	1 340 142	888 345	681 783	760 718	817 707	886 531	1 308 896	2 229 812	2 358 156	3 643 803	3 157 482	4 592 519	4 288 425	3 222 613
		Microscopy examined	-	-	-	-	81 814	107 092	87 103	1 308 896	2 229 812	2 358 156	165 514	130 658	1 781 505	1 799 299	2 872 710
	Niger	Confirmed with microscopy	-	-	-	56 460	76 030	46 170	-	55 628	62 243	79 066	49 285	68 529	1 119 929	1 176 711	0
		RDT examined	-	-	-	-	-	21 230	12 567	1 308 896	530 910	312 802	7 426 774	1 130 514	1 781 505	1 799 299	2 872 710
		Confirmed with RDT	-	-	-	-	-	9873	3956	193 399	434 615	230 609	570 773	712 347	1 119 929	1 176 711	1 953 309
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	2 476 608	2 253 519	2 605 381	2 608 479	3 310 229	3 532 108	3 982 372	2 969 950	2 834 174	4 295 686	3 873 463	4 306 945	6 938 519	12 830 911	16 512 127
		Microscopy examined	-	-	-	-	-	-	-	-	-	-	-	672 185	1 953 399	1 633 960	1 681 469
	Nigeria	Confirmed with microscopy	-	-	-	-	-	-	-	-	-	335 201	523 513	-	-	-	1 233 654
		RDT examined	-	-	-	-	-	-	-	-	-	-	45 924	242 526	2 898 052	7 194 960	9 188 933
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	144 644	27 674	-	-	-	6 593 300
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	-	1 003 793	1 073 546	1 217 405	1 303 494	1 654 246	1 429 072	946 569	772 197	1 247 583	638 669	208 858	483 470	962 618	1 610 812
		Microscopy examined	-	748 806	951 797	1 071 519	1 201 811	1 438 603	1 523 892	1 754 196	1 640 106	2 637 468	2 708 973	1 602 271	2 904 793	2 862 877	4 010 202
	Rwanda	Confirmed with microscopy	-	423 493	506 028	553 150	589 315	683 769	573 686	382 686	316 242	698 745	638 669	208 858	422 224	879 316	1 528 825
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	190 593	201 708	168 004
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	61 246	83 302	81 987
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	32 149	44 034	50 953	47 830	53 991	22 370	7293	2421	6258	6182	3346	8442	12 550	9243	1754
		Microscopy examined	66 076	83 045	93 882	81 372	97 836	68 819	58 672	49 298	38 583	59 228	48 366	83 355	103 773	73 866	33 355
	Sao Tome and Principe	Confirmed with microscopy	31 975	42 086	50 586	42 656	46 486	18 139	5146	2421	1647	3798	2233	6373	10 706	6352	569
		RDT examined	-	-	-	-	-	-	-	-	140 478	60 649	9989	33 924	23 124	34 768	58 090
		Confirmed with RDT	-	-	-	-	-	-	-	-	4611	2384	507	2069	1844	2891	1185
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	1 123 377	931 682	960 478	1 414 383	1 195 402	1 346 158	1 555 310	1 170 234	737 414	584 873	707 772	604 290	634 106	772 222	628 642
		Microscopy examined	56 169	55 494	54 257	85 246	67 750	105 093	138 254	195 487	48 324	43 026	27 793	18 325	19 946	24 205	19 343
	Senegal	Confirmed with microscopy	44 959	12 920	14 425	26 865	22 234	33 160	48 070	78 278	24 830	19 614	17 750	14 142	15 612	20 801	12 636
		RDT examined	-	-	-	-	-	-	-	90 161	487 188	485 548	651 737	555 614	524 971	668 562	697 175
		Confirmed with RDT	-	-	-	-	-	-	-	40 054	217 096	146 319	325 920	263 184	265 468	325 088	252 988
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	460 881	447 826	507 130	524 987	355 638	233 833	160 666	653 987	932 819	747 339	934 028	856 332	1 945 859	1 715 851	1 898 852
		Microscopy examined	-	4985	10 605	12 298	4985	10 605	12 298	-	-	770 463	718 473	46 280	194 787	185 403	66 277
	Sierra Leone	Confirmed with microscopy	-	2206	3702	3945	2206	3702	3945	-	-	273 149	218 473	25 511	104 533	76 077	39 414
		RDT examined	-	-	-	-	-	3452	4675	-	235 800	544 336	1 609 455	886 994	1 975 972	2 377 254	2 056 722
		Confirmed with RDT	-	-	-	-	-	1106	987	-	154 459	373 659	715 555	613 348	1 432 789	1 625 881	1 335 062
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	64 624	26 506	15 649	13 459	13 399	7755	14 456	6327	7796	6117	8060	9866	6846	8851	13 988
		Microscopy examined	-	-	-	-	-	-	-	-	-	-	-	178 387	121 291	364 021	300 291
	South Africa	Confirmed with microscopy	-	26 506	15 649	13 459	13 399	7755	12 098	6327	7796	6072	3787	5986	1632	2572	4101
		RDT examined	-	-	-	-	-	-	-	-	-	-	276 669	204 047	30 053	239 705	240 622
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	4273	3880	3997	6073	7604
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	-	237 712	462 056	646 673	515 958	337 582	116 473	101 008	136 492	325 634	900 283	795 784	1 125 039	1 855 501	-
		Microscopy examined	-	-	-	-	-	-	-	-	116 555	-	-	-	-	-	-
	South Sudan[1]	Confirmed with microscopy	-	-	-	-	-	-	-	-	52 011	-	900 283	112 024	225 371	262 520	-
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	29 374	12 854	10 129	7203	5140	6066	7807	6338	5881	6624	1722	797	626	962	711
		Microscopy examined	-	24 123	13 997	12 564	6754	4587	3985	-	-	-	-	-	-	-	-
	Swaziland	Confirmed with microscopy	-	1395	670	342	574	279	155	84	58	106	87	130	345	488	711
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	181	419	217	474	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	170	153	234	322

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African		Presumed and confirmed	-	498 826	583 872	490 256	516 942	437 662	566 450	715 615	898 112	961 807	983 430	519 450	768 287	882 430	1 130 251
		Microscopy examined	-	-	-	-	-	-	-	231 860	321 171	420 053	478 354	502 977	579 507	560 096	621 119
	Togo	Confirmed with microscopy	-	-	-	-	-	-	-	117 720	152 724	192 966	224 087	237 305	260 535	272 855	310 207
		RDT examined	-	-	-	-	-	-	-	188 225	318 895	314 250	575 245	390 611	660 627	882 475	1 135 581
		Confirmed with RDT	-	-	-	-	-	-	-	103 390	192 138	198 372	393 014	282 145	436 839	609 575	820 044
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	3 552 859	5 624 032	7 536 748	9 657 332	10 717 076	9 867 174	10 168 389	11 978 636	11 602 700	12 086 399	13 208 169	12 173 358	13 591 932	16 541 563	13 724 345
		Microscopy examined	-	-	1 100 374	1 566 474	1 859 780	2 107 011	2 238 155	2 348 373	2 397 037	3 612 418	3 705 284	385 928	3 466 571	3 718 588	2 048 185
	Uganda	Confirmed with microscopy	-	-	557 159	801 784	879 032	1 104 310	867 398	1 045 378	979 298	1 301 337	1 581 160	134 726	1 413 149	1 502 362	578 289
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	194 819	2 449 526	7 387 826	7 060 545
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	97 147	1 249 109	-	3 053 650
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	45 643	369 474	413 361	11 418 731	11 930 393	11 466 713	10 582 608	8 571 839	7 739 151	12 840 249	12 893 535	10 164 967	8 477 435	8 585 482	7 403 562
		Microscopy examined	53 533	53 804	123 352	4 350 487	5 579 910	8 037 619	4 167 063	4 661 982	3 887 346	60 691	3 637 659	5 656 907	6 931 025	6 804 085	727 130
	United Republic of Tanzania	Confirmed with microscopy	17 734	38 537	42 468	1 976 614	2 502 382	2 764 049	1 928 296	1 845 917	77	211	1 277 024	1 813 179	1 772 062	1 481 275	572 524
		RDT examined	-	-	-	-	-	-	-	-	173 311	121 248	136 123	1 628 092	1 091 615	813 103	17 740 207
		Confirmed with RDT	-	-	-	-	-	-	-	-	4508	3031	1974	337 582	214 893	71 169	108 283
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	-	324 584	369 394	11 379 411	11 898 627	11 441 681	10 566 201	8 562 200	7 643 050	12 752 090	12 819 192	10 160 478	8 474 278	8 582 934	7 399 316
		Microscopy examined	-	-	71 384	4 296 588	5 528 934	7 993 977	4 136 387	4 638 471	3 830 767	-	3 573 710	5 513 619	6 784 639	6 720 141	592 320
	Mainland	Confirmed with microscopy	-	20 152	25 485	1 960 909	2 490 446	2 756 421	1 926 711	1 845 624	-	-	1 276 660	1 812 704	1 771 388	1 480 791	571 598
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	1 315 662	701 477	369 444	17 566 750
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	333 568	212 636	69 459	106 609
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	45 643	44 890	43 967	39 320	31 766	25 032	16 407	9639	96 101	88 159	74 343	4489	3157	2548	4246
		Microscopy examined	53 533	53 804	51 968	53 899	50 976	43 642	30 676	23 511	56 579	60 691	63 949	143 288	146 386	83 944	134 810
	Zanzibar	Confirmed with microscopy	17 734	18 385	16 983	15 705	11 936	7628	1585	293	77	211	364	475	674	484	926
		RDT examined	-	-	-	-	-	-	-	-	173 311	121 248	136 123	312 430	390 138	443 659	173 457
		Confirmed with RDT	-	-	-	-	-	-	-	-	4508	3031	1974	4014	2257	1710	1674
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	3 337 796	3 838 402	3 760 335	4 346 172	4 078 234	4 121 356	4 731 338	4 248 295	3 080 301	2 976 395	4 229 839	4 607 908	4 695 400	5 465 122	5 972 933
		Microscopy examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with microscopy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Zambia	RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5 964 354
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4 077 547
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	-	-	-	-	1 815 470	1 494 518	1 313 458	1 154 519	1 003 846	736 897	648 965	319 935	276 963	422 633	535 983
		Microscopy examined	-	-	-	-	-	-	-	234 730	59 132	122 133	-	10 004	-	-	-
	Zimbabwe	Confirmed with microscopy	-	-	-	-	-	-	-	116 518	16 394	57 014	-	-	-	-	-
		RDT examined	-	-	-	-	-	-	-	-	59 132	122 133	513 032	470 007	727 174	1 115 005	1 420 894
		Confirmed with RDT	-	-	-	-	-	-	-	-	16 394	57 014	249 379	319 935	276 963	422 633	535 931
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Region of the Americas		Presumed and confirmed	440	215	125	122	115	252	212	387	130	86	72	18	4	4	4
		Microscopy examined	7949	6685	5043	3977	3018	3018	6353	6353	5157	1455	2547	7872	7027	4913	5691
	Argentina	Confirmed with microscopy	440	215	125	122	115	252	212	387	130	86	72	18	4	4	4
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	46	18	4	4	4
		Presumed and confirmed	2	4	1	3	2	1	49	6	14	0	1	6	0	-	-
		Microscopy examined	22	-	-	34	17	9	546	-	35	-	27 272	31 013	-	-	-
	Bahamas	Confirmed with microscopy	2	4	1	3	2	1	49	6	14	-	1	6	-	-	-
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	1486	1162	1134	1084	1066	1549	844	845	540	256	150	79	37	26	19
		Microscopy examined	18 559	18 173	15 480	15 480	17 358	25 119	25 755	22 134	25 550	26 051	27 366	22 996	20 789	25 351	24 122
	Belize	Confirmed with microscopy	1486	1162	1134	1084	1066	1549	844	845	540	256	150	79	37	26	19
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	7	4	4	0

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Region of the Americas	Bolivia (Plurinational State of)	Presumed and confirmed	31 469	15 765	14 276	20 343	14 910	21 442	19 725	14 610	9748	9743	13 769	7143	7415	7342	7401
		Microscopy examined	143 990	122 933	137 509	158 299	163 307	202 021	208 616	180 316	159 826	132 633	133 463	143 272	121 944	133 260	124 900
		Confirmed with microscopy	31 469	15 765	14 276	20 343	14 910	20 142	18 995	14 610	9748	9234	12 252	6108	6293	6272	7401
		RDT examined	–	–	–	–	5000	6000	6000	1500	5000	981	7394	7390	10 960	10 789	–
		Confirmed with RDT	–	–	–	–	–	1300	730	–	–	509	1517	1035	1122	1070	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Brazil	Presumed and confirmed	613 241	388 303	348 259	408 886	465 004	606 067	549 469	458 652	315 746	309 316	334 668	267 146	242 758	178 546	143 415
		Microscopy examined	2 562 576	2 274 610	2 118 491	2 009 414	2 194 780	2 660 539	2 959 489	2 986 381	2 726 433	2 620 787	2 711 432	2 476 335	2 325 775	1 873 518	1 658 976
		Confirmed with microscopy	613 241	388 303	348 259	408 886	465 004	606 067	549 469	458 652	315 746	309 316	334 667	266 713	237 978	174 048	142 031
		RDT examined	–	–	–	–	–	–	–	–	–	90 275	–	1486	23 566	19 500	11 043
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	433	4780	3719	1384
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Colombia	Presumed and confirmed	144 432	231 233	204 916	180 956	142 241	121 629	120 096	128 462	80 559	79 347	117 650	64 436	60 179	51 722	40 768
		Microscopy examined	478 820	747 079	686 635	640 453	562 681	493 562	451 240	564 755	470 381	428 004	521 342	396 861	346 599	284 332	325 713
		Confirmed with microscopy	144 432	231 233	204 916	180 956	142 241	121 629	120 096	125 262	79 230	79 252	117 637	60 121	50 938	44 293	36 166
		RDT examined	–	–	–	–	–	–	–	25 000	22 754	8362	–	21 171	70 168	42 723	77 819
		Confirmed with RDT	–	–	–	–	–	–	–	3200	1329	95	13	4188	9241	7403	4602
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Costa Rica	Presumed and confirmed	1879	1363	1021	718	1289	3541	2903	1223	966	262	114	17	8	6	6
		Microscopy examined	61 261	43 053	17 738	9622	9204	12 767	24 498	22 641	17 304	4829	15 599	10 690	7485	16 774	4420
		Confirmed with microscopy	1879	1363	1021	718	1289	3541	2903	1223	966	262	114	17	8	6	6
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	4	6	1	4	5
	Dominican Republic	Presumed and confirmed	1233	1038	1296	1529	2355	3837	3525	2711	1840	1643	3414	1616	952	579	496
		Microscopy examined	427 297	411 431	391 216	349 717	322 948	397 108	446 839	435 649	381 010	353 336	469 052	421 405	415 808	431 683	362 304
		Confirmed with microscopy	1233	1038	1296	1529	2355	3837	3525	2711	1840	1643	2482	1616	952	579	496
		RDT examined	–	–	–	–	–	–	–	–	–	–	26 585	56 150	90 775	71 000	54 425
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	932	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Ecuador	Presumed and confirmed	104 528	108 903	86 757	52 065	28 730	17 050	9863	8464	4891	4120	1888	1233	558	378	241
		Microscopy examined	544 646	538 757	403 225	433 244	357 633	358 361	318 132	352 426	384 800	446 740	481 030	460 785	459 157	397 628	370 825
		Confirmed with microscopy	104 528	108 903	86 757	52 065	28 730	17 050	9863	8464	4891	4120	1888	1233	558	378	241
		RDT examined	–	–	–	–	–	–	–	–	2758	4992	7800	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	14	14	10	–
	El Salvador	Presumed and confirmed	753	362	117	85	112	67	49	40	33	20	24	16	19	7	8
		Microscopy examined	279 072	111 830	115 378	102 053	94 819	102 479	113 754	95 857	97 872	83 031	115 256	100 883	124 885	103 748	106 915
		Confirmed with microscopy	753	362	117	85	112	67	49	40	33	20	24	15	19	7	8
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	7	6	6	1	2
	French Guiana, France	Presumed and confirmed	3708	3823	3661	3839	3038	3414	4074	4828	3320	3462	1632	1209	900	875	448
		Microscopy examined	48 162	44 718	44 718	32 402	32 402	32 402	32 402	32 402	11 994	20 065	14 373	14 429	13 638	22 327	14 651
		Confirmed with microscopy	3708	3823	3661	3839	3038	3414	4074	2797	1341	1433	688	505	401	324	187
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	2031	1979	2029	944	704	499	551	261
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Guatemala	Presumed and confirmed	53 311	35 824	35 540	31 127	28 955	39 571	31 093	15 382	7198	7080	7384	6817	5346	6214	4931
		Microscopy examined	246 642	198 114	197 113	156 227	148 729	178 726	168 958	129 410	173 678	154 652	235 075	195 080	186 645	153 731	264 269
		Confirmed with microscopy	53 311	35 824	35 540	31 127	28 955	39 571	31 093	15 382	7198	7080	7384	6817	5346	6214	4931
		RDT examined	–	–	–	–	–	–	–	3000	2000	2000	2000	–	0	0	50 025
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	0	–	0	0	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Guyana	Presumed and confirmed	24 018	27 122	21 895	27 627	28 866	38 984	21 064	11 656	11 815	13 673	22 935	29 506	31 656	31 479	12 354
		Microscopy examined	209 197	211 221	175 966	185 877	151 938	210 429	202 688	178 005	137 247	169 309	212 863	201 693	196 622	205 903	142 843
		Confirmed with microscopy	24 018	27 122	21 895	27 627	28 866	38 984	21 064	11 656	11 815	13 673	22 935	29 471	31 601	31 479	12 354
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	0	–	0	0
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	35	55	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Region of the Americas	Haiti	Presumed and confirmed	16 897	9837	–	–	10 802	21 778	32 739	29 825	36 774	49 535	84 153	32 969	25 423	26 543	17 696
		Microscopy examined	21 190	51 067	–	–	30 440	3 541 506	87 951	142 518	168 950	270 438	270 427	184 934	167 726	172 624	134 822
		Confirmed with microscopy	16 897	9837	–	–	10 802	21 778	32 739	29 825	36 774	49 535	84 153	32 969	25 423	20 586	10 920
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	46	5586	123 961
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6742
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Honduras	Presumed and confirmed	35 125	24 149	17 223	14 063	17 134	15 943	11 947	10 512	8368	9313	9685	7618	6439	5428	3380
		Microscopy examined	175 577	174 430	178 616	137 891	145 082	153 474	125 162	130 255	119 484	108 529	152 961	152 451	155 165	144 436	151 420
		Confirmed with microscopy	35 125	24 149	17 223	14 063	17 134	15 943	11 947	10 512	8368	9313	9685	7465	6439	5364	3380
		RDT examined	–	–	–	–	–	2500	2500	–	–	4000	4000	4000	4000	237	1427
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	0	–	45	10	64	102
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Jamaica	Presumed and confirmed	7	6	7	9	141	88	194	199	22	22	12	9	5	–	–
		Microscopy examined	874	596	725	394	3879	2470	6821	–	30 732	34 149	10 763	5042	–	–	–
		Confirmed with microscopy	7	6	7	9	141	88	194	199	22	22	12	9	–	–	–
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	252
	Mexico	Presumed and confirmed	7390	4996	4624	3819	3406	2967	2514	2361	2357	2703	1226	1130	842	499	664
		Microscopy examined	2 003 569	1 857 233	1 852 553	1 565 155	1 454 575	1 559 076	1 345 915	1 430 717	1 246 780	1 240 087	1 192 081	1 035 424	1 025 659	1 017 508	900 578
		Confirmed with microscopy	7390	4996	4624	3819	3406	2967	2514	2361	2357	2703	1226	1130	842	499	664
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	7	6	9	4	8
	Nicaragua	Presumed and confirmed	23 878	10 482	7695	6717	6897	6642	3114	1356	762	610	692	925	1235	1194	1163
		Microscopy examined	509 443	482 919	491 689	448 913	492 319	516 313	464 581	521 464	533 173	544 717	535 914	521 904	536 278	517 141	605 357
		Confirmed with microscopy	23 878	10 482	7695	6717	6897	6642	3114	1356	762	610	692	925	1235	1194	1163
		RDT examined	–	–	–	–	–	–	11 563	16 173	10 000	9000	18 500	14 201	16 444	19 029	15 620
		Confirmed with RDT	–	–	–	–	–	–	–	0	0	0	0	–	0	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Panama	Presumed and confirmed	1036	928	2244	4500	5095	3667	1663	1281	744	778	418	354	844	705	874
		Microscopy examined	149 702	156 589	165 796	166 807	171 179	208 582	212 254	204 193	200 574	158 481	141 038	116 588	107 711	93 624	80 701
		Confirmed with microscopy	1036	928	2244	4500	5095	3667	1663	1281	744	778	418	354	844	705	874
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	0	0	0	0
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	0	0	0	0
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Paraguay	Presumed and confirmed	6853	2710	2778	1392	694	376	823	1341	348	91	27	10	15	11	8
		Microscopy examined	97 026	71 708	99 338	126 582	97 246	85 942	111 361	92 339	94 316	64 660	62 178	48 611	31 499	24 806	24 832
		Confirmed with microscopy	6853	2710	2778	1392	694	376	823	1341	341	91	27	10	15	11	8
		RDT examined	–	–	–	–	–	–	–	–	1997	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	7	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	9	9	13	11	8
	Peru	Presumed and confirmed	68 321	78 544	99 237	88 408	93 581	87 699	64 925	50 797	44 522	42 645	31 546	25 039	31 570	43 468	64 676
		Microscopy examined	1 483 816	1 417 423	1 582 385	1 485 012	1 438 925	1 438 925	1 438 925	1 438 925	796 337	892 990	744 627	702 894	758 723	863 790	864 413
		Confirmed with microscopy	68 321	78 544	99 237	88 408	93 581	87 699	64 925	50 797	44 522	42 645	31 545	25 005	31 436	43 139	64 676
		RDT examined	–	–	–	–	–	–	–	–	64 953	–	23	58	562	858	1634
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	1	34	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Suriname	Presumed and confirmed	11 361	16 003	12 837	10 982	8378	9131	3289	1741	2709	2499	1771	795	569	729	400
		Microscopy examined	63 377	67 369	68 070	43 241	56 975	59 855	45 722	31 768	28 137	33 279	16 533	15 135	17 464	13 693	16 559
		Confirmed with microscopy	11 361	16 003	12 837	10 982	8378	9131	3289	1104	2086	1842	1574	751	306	530	254
		RDT examined	–	–	–	–	–	–	–	2224	1774	1438	541	1025	4008	6043	10 379
		Confirmed with RDT	–	–	–	–	–	–	–	637	623	538	138	20	50	199	120
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Venezuela (Bolivarian Republic of)	Presumed and confirmed	29 736	20 006	29 491	31 719	46 655	45 049	37 062	41 749	32 037	35 828	45 155	45 824	52 803	78 643	90 708
		Microscopy examined	261 866	198 000	278 205	344 236	420 165	420 165	479 708	392 197	414 137	370 258	400 495	382 303	410 663	476 764	522 617
		Confirmed with microscopy	29 736	20 006	29 491	31 719	46 655	45 049	37 062	41 749	32 037	35 828	45 155	45 824	52 803	78 643	90 708
		RDT examined	–	–	–	–	–	–	–	4141	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Eastern Mediterranean	Afghanistan	Presumed and confirmed	203 911	–	626 839	585 602	273 377	326 694	414 407	456 490	467 123	390 729	392 463	482 748	391 365	319 742	290 079
		Microscopy examined	257 429	–	–	–	248 946	338 253	460 908	504 856	549 494	521 817	524 523	531 053	511 408	507 145	514 466
		Confirmed with microscopy	94 475	–	–	360 940	242 022	116 444	86 129	92 202	81 574	64 880	69 397	77 549	54 840	39 263	61 362
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	0	0	0	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	0	0	0	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Djibouti	Presumed and confirmed	4667	4312	5021	5036	2142	2469	6457	4694	3528	2686	1010	230	27	1684	9439
		Microscopy examined	–	–	–	–	–	1913	–	3461	2896	–	–	124	1410	7189	39 284
		Confirmed with microscopy	–	–	–	5036	122	413	1796	210	119	2686	1010	–	22	939	9439
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Egypt	Presumed and confirmed	17	11	10	45	43	23	29	30	80	94	85	116	206	262	313
		Microscopy examined	1 155 904	1 357 223	1 041 767	–	–	–	–	23 402	34 880	41 344	664 294	–	818 600	–	–
		Confirmed with microscopy	17	11	10	45	43	23	29	30	80	94	85	116	206	262	313
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	17	11	10	45	43	23	29	30	80	94	85	116	206	262	291
	Iran (Islamic Republic of)	Presumed and confirmed	19 716	19 303	15 558	23 562	13 821	18 966	15 909	15 712	11 460	6122	3031	3239	1629	1373	1243
		Microscopy examined	1 732 778	1 867 500	1 416 693	1 358 262	1 326 108	1 674 895	1 131 261	1 074 196	966 150	744 586	614 817	530 470	479 655	385 172	468 513
		Confirmed with microscopy	19 716	19 303	15 558	23 562	13 821	18 966	15 909	15 712	11 460	6122	3031	3239	1629	1373	1243
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	0	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	0	–	–
		Imported cases	7422	10 379	6436	6502	6219	4570	2782	2434	3111	1645	1184	1529	842	853	867
	Iraq	Presumed and confirmed	1860	1265	952	347	155	47	24	3	6	1	7	11	8	8	2
		Microscopy examined	–	997 812	1 072 587	681 070	913 400	944 163	970 000	844 859	1 105 054	1 493 143	1 849 930	2 097 732	1 963 638	1 796 587	1 595 338
		Confirmed with microscopy	1860	1265	952	347	155	47	24	3	6	1	7	11	8	8	2
		RDT examined	–	–	–	–	–	10 824	–	–	–	–	–	–	0	–	–
		Confirmed with RDT	–	–	–	–	–	0	–	–	–	–	–	0	0	–	–
		Imported cases	–	–	–	3	5	3	1	1	4	1	7	11	8	8	2
	Morocco[2]	Presumed and confirmed	59	59	107	73	56	100	83	75	142	145	218	312	364	314	493
		Microscopy examined	277 671	335 723	345 173	405 800	405 601	–	–	367 705	292 826	290 566	232 598	171 400	285 039	108 432	110 858
		Confirmed with microscopy	59	59	107	73	56	100	83	75	142	145	218	312	364	314	493
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	0	0	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	0	0	–
		Imported cases	56	59	88	69	55	100	83	75	142	145	215	312	364	314	493
	Oman	Presumed and confirmed	694	635	590	740	615	544	443	705	965	898	1193	1531	2051	1451	1001
		Microscopy examined	494 884	521 552	495 826	409 532	326 127	258 981	242 635	244 346	245 113	234 803	226 009	267 353	269 990	230 041	184 996
		Confirmed with microscopy	694	635	590	740	615	544	443	705	965	898	1193	1531	2051	1451	1001
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	0	0	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	0	0	–
		Imported cases	688	633	584	734	615	544	443	701	957	898	1169	1518	2029	1440	986
	Pakistan	Presumed and confirmed	3 337 054	3 577 845	4 238 778	4 210 611	1 958 350	4 022 823	4 314 637	4 553 732	4 658 701	4 242 032	4 281 356	4 065 802	4 285 449	3 472 727	3 666 257
		Microscopy examined	–	3 572 425	3 399 524	4 577 037	4 243 108	4 776 274	4 490 577	4 905 561	3 775 793	3 655 272	4 281 346	4 168 648	4 497 330	3 933 321	4 343 418
		Confirmed with microscopy	82 526	125 292	107 666	125 152	126 719	127 826	124 910	128 570	104 454	132 688	220 870	287 592	250 526	196 078	193 952
		RDT examined	–	–	–	–	–	–	–	–	–	243 521	279 724	518 709	410 949	628 504	779 815
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	34 891	19 721	46 997	40 255	85 677	81 197
		Imported cases	–	–	–	2592	1101	290	1149	190	120	–	–	–	–	–	–
	Saudi Arabia	Presumed and confirmed	6608	3074	2612	1724	1232	1059	1278	2864	1491	2333	1941	2788	3406	2513	2305
		Microscopy examined	–	821 860	825 443	819 869	780 392	715 878	804 087	1 015 781	1 114 841	1 078 745	944 723	1 062 827	1 186 179	1 309 783	1 249 752
		Confirmed with microscopy	6608	3074	2612	1724	1232	1059	1278	2864	1491	2333	1941	2788	3406	2513	2305
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	0	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	0	–	–
		Imported cases	1872	1471	1402	1024	924	855	1008	2397	1430	2275	1912	2719	3324	2479	2254
	Somalia	Presumed and confirmed	10 364	10 364	96 922	23 349	36 732	28 404	49 092	50 444	82 980	72 362	24 553	41 167	35 712	9135	26 174
		Microscopy examined	–	–	21 350	12 578	30 127	47 882	–	–	73 985	59 181	20 593	26 351	–	–	–
		Confirmed with microscopy	–	–	15 732	7571	11 436	12 516	16 430	16 675	36 905	25 202	5629	1627	–	–	–
		RDT examined	–	–	–	–	–	–	–	–	–	–	200 105	35 236	37 273	67 464	64 480
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	18 924	1724	6817	7407	11 001
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Eastern Mediterranean	Sudan	Presumed and confirmed	4 332 827	3 985 702	3 054 400	3 084 320	2 083 711	2 515 693	2 117 514	3 040 181	3 073 996	2 361 188	1 465 496	1 214 004	964 698	989 946	1 207 771
		Microscopy examined	–	–	–	–	–	–	–	2 243 981	2 050 354	2 791 156	–	–	–	–	–
		Confirmed with microscopy	368 557	203 491	280 550	933 267	537 899	628 417	721 233	686 908	569 296	711 462	625 365	506 806	526 931	592 383	579 038
		RDT examined	–	–	–	–	–	–	–	–	–	–	1 653 300	2 222 380	2 000 700	1 800 000	788 281
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	95 192	–	–	–	489 468
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Syrian Arab Republic[3]	Presumed and confirmed	42	79	27	24	13	28	34	37	51	39	23	48	42	22	21
		Microscopy examined	–	–	–	–	–	–	–	68 000	–	25 751	19 151	25 109	19 136	18 814	6803
		Confirmed with microscopy	42	79	27	24	13	28	34	37	51	39	23	48	42	22	21
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	0	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	0	0	–	–
		Imported cases	36	16	12	22	12	28	34	37	51	39	23	48	42	22	21
	Yemen	Presumed and confirmed	1 394 495	–	187 159	265 032	158 561	200 560	217 270	223 299	158 608	138 579	198 963	142 147	165 678	149 451	97 089
		Microscopy examined	–	–	556 143	398 472	501 747	472 970	799 747	585 015	781 318	797 621	645 463	645 093	685 406	723 691	585 826
		Confirmed with microscopy	1 394 495	–	75 508	50 811	48 756	44 150	55 000	67 607	43 545	53 445	78 269	60 207	68 849	63 484	37 763
		RDT examined	–	–	–	–	–	–	–	303	5015	18 566	97 289	108 110	150 218	157 457	109 767
		Confirmed with RDT	–	–	–	–	–	–	–	70	661	2001	28 428	30 203	41 059	39 294	29 750
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
European	Armenia[2]	Presumed and confirmed	141	79	52	29	47	7	0	1	1	0	1	–	–	–	–
		Microscopy examined	356	174	165	126	220	209	230	658	30 761	31 467	31 026	–	–	–	–
		Confirmed with microscopy	141	79	52	29	47	7	0	1	1	0	1	–	–	–	–
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	0	0	0	0	0	0	0	0	0	0	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	0	1	1	0	1	0	–	–	–
	Azerbaijan	Presumed and confirmed	1526	1058	506	482	386	242	143	110	73	80	52	8	4	4	2
		Microscopy examined	527 688	536 260	507 252	536 822	545 145	515 144	498 697	465 033	408 780	451 436	456 652	449 168	497 040	432 810	399 925
		Confirmed with microscopy	1526	1058	506	482	386	242	143	110	73	80	52	8	4	4	2
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	0	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	0	1	1	2	2	4	1	4	2
	Georgia	Presumed and confirmed	245	439	474	316	257	155	60	25	8	7	0	6	5	7	6
		Microscopy examined	–	3574	6145	5457	3365	5169	4400	3400	4398	4120	2368	2032	1046	192	440
		Confirmed with microscopy	245	438	474	316	257	155	60	25	8	7	0	6	5	7	6
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	0	0	0	0	0	0	0	0	0	0	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	1	0	2	6	0	5	4	7	6
	Kyrgyzstan	Presumed and confirmed	12	28	2743	468	93	226	318	96	18	4	6	5	3	4	0
		Microscopy examined	70 500	72 020	69 807	144 070	79 895	114 316	74 729	62 444	40 833	33 983	30 190	27 850	18 268	54 249	35 600
		Confirmed with microscopy	12	28	2743	468	93	226	318	96	18	4	6	5	3	4	0
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	0	0	0	0	0	0	0	0	0	0	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	1	0	0	0	3	5	3	4	0
	Russian Federation	Presumed and confirmed	795	898	642	533	382	205	143	122	96	107	102	85	–	–	–
		Microscopy examined	–	–	–	–	–	–	–	35 784	28 340	27 382	33 024	28 311	–	–	–
		Confirmed with microscopy	795	898	642	533	382	205	143	122	96	107	102	85	–	–	–
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	0	0	0	0	0	0	0	0	0	0	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	41	42	47	107	101	83	–	–	–
	Tajikistan	Presumed and confirmed	233 785	248 565	244 632	296 123	272 743	216 197	175 894	159 232	158 068	165	112	78	33	14	7
		Microscopy examined	233 785	248 565	244 632	296 123	272 743	216 197	175 894	159 232	158 068	165 266	173 523	173 367	209 239	213 916	200 241
		Confirmed with microscopy	19 064	11 387	6160	5428	3588	2309	1344	635	318	165	112	78	33	14	7
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	28	7	0	1	1	13	15	7	5
	Turkey	Presumed and confirmed	11 432	10 812	10 224	9222	5302	2084	796	358	215	84	78	128	376	285	249
		Microscopy examined	1 597 290	1 550 521	1 320 010	1 187 814	1 158 673	1 042 509	934 839	775 502	616 570	606 875	507 841	421 295	337 830	255 125	189 854
		Confirmed with microscopy	11 432	10 812	10 224	9222	5302	2084	796	358	215	84	78	128	376	285	249
		RDT examined	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Confirmed with RDT	0	0	0	0	0	0	0	0	0	0	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	29	29	49	46	69	127	157	251	244

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
European		Presumed and confirmed	24	8	18	7	3	1	1	0	1	0	0	-	-	-	-
		Microscopy examined	50 105	50 075	59 834	72 643	71 377	56 982	58 673	65 666	75 524	94 237	81 784	-	-	-	-
		Confirmed with microscopy	24	8	18	7	3	1	1	0	1	0	0	-	-	-	-
	Turkmenistan[2]	RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	0	0	1	0	0	0	-	-	-
		Presumed and confirmed	126	77	74	74	66	102	76	89	27	4	5	1	1	3	1
		Microscopy examined	735 164	691 500	735 164	812 543	893 187	917 843	924 534	858 968	883 807	916 839	921 364	886 243	805 761	908 301	812 347
		Confirmed with microscopy	126	77	74	74	66	102	76	89	27	4	5	1	1	3	1
	Uzbekistan	RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	3	2	20	4	2	1	1	3	1
South-East Asia		Presumed and confirmed	437 838	320 010	313 859	489 377	386 555	290 418	164 159	59 866	168 885	79 853	91 227	51 773	29 518	3864	10 216
		Microscopy examined	360 300	250 258	275 987	245 258	185 215	220 025	209 991	266 938	336 505	397 148	308 326	270 253	253 887	74 755	78 719
		Confirmed with microscopy	55 599	54 216	62 269	54 654	58 894	48 121	32 857	58 659	50 004	25 203	20 519	20 232	4016	1866	3249
	Bangladesh	RDT examined	-	-	-	-	-	-	-	3199	106 001	156 639	152 936	119 849	35 675	19 171	46 482
		Confirmed with RDT	-	-	-	-	-	-	-	1207	34 686	38 670	35 354	31 541	5885	1998	6967
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	5935	5982	6511	3806	2670	1825	1868	793	450	1421	487	207	82	45	48
		Microscopy examined	76 445	65 974	74 696	61 246	54 892	60 152	66 079	51 446	47 268	62 341	54 709	44 481	42 512	31 632	33 586
		Confirmed with microscopy	5935	5982	6511	3806	2670	1825	1868	793	329	972	436	194	82	45	48
	Bhutan	RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	0	23	29
		Presumed and confirmed	204 428	300 000	241 192	60 559	33 803	11 507	12 983	4795	16 989	14 845	13 520	16 760	23 537	15 673	11 212
		Microscopy examined	-	143 674	129 889	32 083	-	-	-	7985	24 299	34 818	25 147	26 513	39 238	71 453	38 201
		Confirmed with microscopy	90 582	143 674	16 578	16 538	27 090	11 315	12 983	4795	16 989	14 845	13 520	16 760	21 850	14 407	10 535
	Democratic People's Republic of Korea	RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
		Imported cases	-	-	-	-	-	-	-	-	378	213	-	-	0	0	0
		Presumed and confirmed	2 031 790	2 085 484	1 841 227	1 869 403	1 915 363	1 816 569	1 785 109	1 508 927	1 532 497	1 563 574	1 599 986	1 310 656	1 067 824	881 730	1 102 205
		Microscopy examined	86 790 375	90 389 019	91 617 725	99 136 143	97 111 526	104 120 792	106 606 703	86 355 000	86 734 579	103 396 076	108 679 429	108 969 660	109 033 790	113 109 094	124 066 331
		Confirmed with microscopy	2 031 790	2 085 484	1 841 227	1 869 403	1 915 363	1 816 569	1 785 109	1 508 927	1 532 497	1 563 574	1 599 986	1 310 656	1 067 824	881 730	1 102 205
	India	RDT examined	-	-	-	-	-	-	-	8 500 000	9 000 000	9 100 000	10 600 000	10 500 384	13 125 480	14 782 104	14 562 000
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	256 993	267 592	273 793	223 065	304 936	315 394	347 597	333 792	266 277	418 439	465 764	422 447	417 819	343 527	252 027
		Microscopy examined	1 880 418	1 604 573	1 440 302	1 224 224	2 445 538	2 113 265	1 233 334	1 223 686	1 230 495	1 420 795	1 335 445	962 090	1 429 139	1 447 980	1 300 835
		Confirmed with microscopy[4]	256 993	267 592	273 793	223 065	304 936	315 394	347 597	333 792	266 277	418 439	465 764	422 447	417 819	343 527	252 027
	Indonesia	RDT examined	-	-	-	-	-	-	-	-	13 314	20 922	21 964	31 535	29 278	20 352	16 410
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	581 560	661 463	721 739	716 806	602 888	516 041	538 110	520 887	634 280	591 492	693 124	567 452	480 586	315 509	152 195
		Microscopy examined	381 610	463 194	467 871	481 201	432 581	437 387	485 251	512 862	499 296	381 424	275 374	312 689	265 135	138 473	93 842
		Confirmed with microscopy	120 083	170 502	173 096	177 530	152 070	165 737	203 071	216 510	223 174	164 965	103 285	91 752	75 220	25 215	11 952
	Myanmar	RDT examined	-	-	-	-	-	-	-	499 725	543 941	599 216	729 878	795 618	1 158 831	1 162 083	797 071
		Confirmed with RDT	-	-	-	-	-	-	-	157 448	223 899	271 103	317 523	373 542	405 366	226 058	140 243
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	48 686	146 351	133 431	196 605	140 687	178 056	166 474	135 809	153 331	123 903	96 383	71 752	70 272	38 113	122 874
		Microscopy examined	100 063	126 962	183 519	196 223	158 044	188 930	166 476	135 809	153 331	150 230	102 977	95 011	152 780	100 336	127 130
		Confirmed with microscopy	7981	6396	12 750	9506	4895	5050	4969	5621	3888	3335	3115	1910	1659	1197	1469
	Nepal	RDT examined	-	-	-	-	-	-	-	-	-	-	17 887	25 353	22 472	32 989	48 444
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	779	1504	433	777	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Presumed and confirmed	210 039	66 522	41 411	10 510	3720	1640	591	198	670	558	736	175	93	95	49
		Microscopy examined	1 781 372	1 353 386	1 390 850	1 192 259	1 198 181	974 672	1 076 121	1 047 104	1 047 104	909 632	1 001 107	985 060	948 250	1 236 580	1 069 817
		Confirmed with microscopy	210 039	66 522	41 411	10 510	3720	1640	591	198	670	558	736	175	93	95	49
	Sri Lanka	RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	52	51	70	95	49

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
South-East Asia	Thailand	Presumed and confirmed	78 561	63 528	44 555	37 355	26 690	29 782	30 294	33 178	28 569	29 462	32 480	24 897	32 569	41 362	37 921
		Microscopy examined	4 403 739	4 100 778	3 819 773	3 256 939	3 012 710	2 524 788	2 280 070	2 041 733	1 910 982	1 816 383	1 695 980	1 354 215	1 130 757	1 830 090	1 756 528
		Confirmed with microscopy	78 561	63 528	44 555	37 355	26 690	29 782	30 294	33 178	26 150	23 327	22 969	14 478	32 569	33 302	37 921
		RDT examined	-	-	-	-	-	-	-	-	20 786	68 437	81 997	96 670	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	2419	6135	9511	10 419	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Timor-Leste	Presumed and confirmed	15 212	83 049	86 684	33 411	202 662	130 679	164 413	121 905	143 594	108 434	119 072	36 064	6148	1042	342
		Microscopy examined	-	-	60 311	83 785	79 459	97 781	96 485	114 283	92 870	96 828	109 806	82 175	64 318	56 192	30 515
		Confirmed with microscopy	15 212	-	26 651	33 411	39 164	43 093	37 896	46 869	45 973	41 824	40 250	19 739	5211	1025	342
		RDT examined	-	-	-	-	-	-	-	32 027	30 134	41 132	85 643	127 272	117 599	121 991	86 592
		Confirmed with RDT	-	-	-	-	-	-	-	5944	5287	5703	7887	-	-	-	0
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Western Pacific	Cambodia	Presumed and confirmed	203 164	110 161	100 194	119 712	91 855	67 036	89 109	59 848	58 887	83 777	49 356	57 423	45 553	24 130	26 278
		Microscopy examined	122 555	121 691	108 967	106 330	99 593	88 991	94 460	135 731	130 995	96 886	90 175	86 526	80 212	54 716	48 591
		Confirmed with microscopy	51 320	42 150	38 048	42 234	37 389	26 914	33 010	22 081	20 347	24 999	14 277	13 792	10 124	4598	5288
		RDT examined	18 167	23 928	24 954	54 024	51 359	58 791	102 590	46 989	51 036	94 788	103 035	130 186	108 974	94 600	92 525
		Confirmed with RDT	11 122	11 451	8854	29 031	22 356	22 522	45 686	20 437	21 777	39 596	35 079	43 631	30 352	16 711	19 864
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	China	Presumed and confirmed	-	26 945	172 200	169 828	145 676	100 106	116 260	133 699	135 467	14 598	7855	4498	2678	4121	2921
		Microscopy examined	-	5 391 809	5 641 752	4 635 132	4 212 559	3 814 715	3 995 227	3 958 190	4 316 976	4 637 168	7 115 784	9 189 270	6 918 657	5 554 960	4 403 633
		Confirmed with microscopy	-	21 237	25 520	28 491	27 197	21 936	35 383	29 304	16 650	9287	4990	3367	2603	4086	2921
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	556	621	1714	2632	2097	1192	780	-	-	-	2399	4007	2864
	Lao People's Democratic Republic	Presumed and confirmed	279 903	103 983	85 192	88 657	53 808	30 359	20 468	20 364	19 347	22 800	23 047	17 904	46 819	41 385	48 071
		Microscopy examined	256 273	226 399	245 916	256 534	181 259	156 954	113 165	159 002	168 027	173 459	150 512	213 578	223 934	202 422	133 916
		Confirmed with microscopy	40 106	27 076	21 420	18 894	16 183	13 615	8093	6371	4965	5508	4524	6226	13 232	10 036	8018
		RDT examined	-	-	-	-	-	-	95 676	113 694	143 368	84 511	127 790	7743	145 425	133 337	160 626
		Confirmed with RDT	-	-	-	-	-	-	10 289	11 087	14 382	9166	16 276	11 609	32 970	28 095	40 053
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Malaysia	Presumed and confirmed	874 894	875 849	842 683	754 540	678 952	573 788	590 945	551 586	588 489	7010	6650	5306	4725	3850	3923
		Microscopy examined	1 832 802	1 808 759	1 761 721	1 632 024	1 577 387	1 425 997	1 388 267	1 565 033	1 562 148	1 565 982	1 619 074	1 600 439	1 566 872	1 576 012	1 443 958
		Confirmed with microscopy	12 705	12 780	11 019	6338	6154	5569	5294	5456	7390	7010	6650	5306	4725	3850	3923
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	873	584	831	1142	924	865	766
	Papua New Guinea	Presumed and confirmed	1 751 883	1 643 075	1 587 580	1 650 662	1 868 413	1 788 318	1 676 681	1 618 699	1 606 843	1 431 395	1 379 787	1 151 343	878 371	1 125 808	644 688
		Microscopy examined	225 535	254 266	227 387	205 103	222 903	267 132	223 464	239 956	240 686	128 335	198 742	184 466	156 495	139 972	83 257
		Confirmed with microscopy	79 839	94 484	75 748	72 620	91 055	92 957	88 817	82 979	81 657	62 845	75 985	70 603	67 202	70 658	68 114
		RDT examined	-	-	-	-	-	-	10 756	7643	5955	25 150	20 820	27 391	228 857	468 380	475 654
		Confirmed with RDT	-	-	-	-	-	-	5121	3976	2795	14 913	17 971	13 457	82 993	209 336	213 068
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Philippines	Presumed and confirmed	36 596	34 968	37 005	48 441	50 850	46 342	35 405	36 235	23 655	19 316	19 106	9617	8154	7720	4903
		Microscopy examined	-	-	-	-	-	581 871	378 535	403 415	278 652	352 006	301 031	327 060	332 063	317 360	286 222
		Confirmed with microscopy	-	-	-	-	-	-	-	36 235	23 655	19 316	18 560	9552	7133	5826	3618
		RDT examined	-	-	-	-	-	12 125	18 171	4839	-	-	-	-	-	1523	28 598
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	688	1285
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Republic of Korea	Presumed and confirmed	4183	2556	1799	1171	864	1369	2051	2227	1052	1345	1772	838	555	443	638
		Microscopy examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with microscopy	-	-	-	-	-	-	-	2227	1052	1345	1772	838	555	443	638
		RDT examined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Imported cases	-	-	-	-	-	-	-	-	-	36	56	64	47	50	78
	Solomon Islands	Presumed and confirmed	368 913	373 838	353 114	208 364	412 251	393 288	403 892	150 126	102 140	84 078	95 006	80 859	57 296	53 270	51 649
		Microscopy examined	300 806	297 345	278 178	300 591	321 954	316 898	328 555	311 447	276 639	231 221	212 329	182 847	202 620	191 137	173 900
		Confirmed with microscopy	68 107	76 493	74 936	92 227	90 297	76 390	75 337	65 404	40 535	33 002	35 373	23 202	21 904	21 540	13 865
		RDT examined	-	-	-	-	-	-	-	-	-	-	17 300	17 457	13 987	26 216	26 658
		Confirmed with RDT	-	-	-	-	-	-	-	-	-	-	4331	3455	2479	4069	4539
		Imported cases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WHO region	Country/ area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Western Pacific		Presumed and confirmed	33 779	19 493	35 151	43 386	42 008	34 912	30 067	20 215	24 279	22 271	16 831	5764	3435	2381	982
		Microscopy examined	31 668	36 576	54 234	54 524	53 524	61 092	40 625	38 214	30 267	24 813	29 180	19 183	16 981	15 219	18 135
		Confirmed with microscopy	6768	7647	14 339	15 240	14 653	9834	8055	5471	3473	3615	4013	2077	733	767	190
	Vanuatu	RDT examined	–	–	–	–	–	–	–	–	1639	2065	10 246	12 529	16 292	13 724	17 435
		Confirmed with RDT	–	–	–	–	–	–	–	–	292	574	4156	2743	2702	1614	792
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Presumed and confirmed	274 910	188 122	151 961	135 989	108 350	84 473	74 766	59 601	51 668	49 186	54 297	45 588	43 717	35 406	27 868
		Microscopy examined	2 682 862	2 821 440	2 856 539	2 738 600	2 694 854	2 728 481	2 842 429	3 634 060	1 297 365	2 829 516	2 760 119	2 791 917	2 897 730	2 684 996	2 357 536
		Confirmed with microscopy	74 316	68 699	47 807	38 790	24 909	19 496	22 637	16 389	11 355	16 130	17 515	16 612	19 638	17 128	15 752
	Viet Nam	RDT examined	–	10 000	94 000	–	–	–	130 000	78 294	72 087	44 647	7017	491 373	514 725	412 530	416 483
		Confirmed with RDT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Imported cases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Regional summary (Presumed and confimed malaria cases)			**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
		African	33 178 671	44 481 658	47 844 356	69 120 148	74 251 865	75 645 235	75 736 127	79 810 658	71 715 909	94 061 289	103 145 240	100 205 022	110 913 398	124 458 213	126 256 273
		Eastern Mediterranean	9 312 314	7 602 649	8 228 975	8 200 465	4 528 808	7 117 410	7 137 177	8 348 266	8 459 131	7 217 208	6 370 339	5 954 143	5 850 635	4 948 628	5 302 187
		European	248 086	261 964	259 365	307 254	279 279	219 219	177 431	160 033	158 507	451	356	311	422	317	265
		Region of the Americas	1 181 104	982 778	895 134	889 993	909 466	1 050 744	921 236	788 428	565 443	573 032	678 386	493 915	469 577	434 398	389 660
		South-East Asia	3 871 042	3 999 981	3 704 402	3 640 897	3 619 974	3 291 911	3 211 598	2 720 150	2 945 542	2 931 981	3 112 779	2 502 183	2 128 448	1 640 960	1 689 089
		Western Pacific	3 828 225	3 378 990	3 366 879	3 220 750	3 453 027	3 119 991	3 039 644	2 652 600	2 611 827	1 735 776	1 653 707	1 379 140	1 091 303	1 298 514	811 921
		Total	**51 619 442**	**60 708 020**	**64 299 111**	**85 379 507**	**87 042 419**	**90 444 510**	**90 223 213**	**94 480 135**	**86 456 359**	**106 519 737**	**114 960 807**	**110 534 714**	**120 453 783**	**132 781 030**	**134 449 395**

RDT, rapid diagnostic test

Cases reported before 2000 can be presumed and confirmed or only confirmed cases depending on the country.

1 In May 2013 South Sudan was reassigned to the WHO African Region (WHA resolution 66.21, http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R21-en.pdf)

2 Armenia, Morocco and Turkmenistan are certified malaria free countries, but are included in this listing for historical purposes

3 There is no local transmission

4 Combined microscopy and RDT positive cases

Annex 6C – Reported malaria cases by species, 2000–2014

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African	Algeria	Suspected	27 733	26 411	18 803	17 059	16 686	18 392	13 869	14 745	11 964	15 635	12 224	11 974	15 790	12 762	8690
		No *Pf*	261	247	188	313	71	242	91	261	186	88	401	179	860	550	203
		No *Pv*	277	181	116	111	92	57	24	24	10	6	4	12	24	30	50
		No Other	–	–	–	–	–	–	–	–	0	0	3	0	–	23	13
	Angola	Suspected	2 080 348	1 249 767	1 862 662	3 246 258	2 489 170	2 329 316	2 283 097	3 157 924	4 713 776	5 232 136	4 591 529	4 469 357	4 849 418	5 273 305	6 134 471
		No *Pf*	–	–	–	–	–	–	106 400	475 900	542 916	–	–	–	–	–	–
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Benin	Suspected	–	717 290	782 818	819 256	853 034	803 462	861 847	1 171 522	1 147 005	1 256 708	1 432 095	1 565 487	1 875 386	2 041 444	1 955 773
		No *Pf*	–	–	–	–	–	–	–	–	–	534 590	–	68 745	0	–	–
		No *Pv*	–	–	–	–	–	–	–	–	–	0	–	0	0	–	–
		No Other	–	–	–	–	–	–	–	–	–	0	–	0	0	–	–
	Botswana	Suspected	71 555	48 281	28 907	23 657	22 404	11 242	23 514	30 906	41 153	32 460	12 196	1141	308	506	1485
		No *Pf*	–	–	–	–	–	–	–	381	914	951	1046	432	386	912	1346
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Burkina Faso	Suspected	–	382 593	1 221 666	1 474 440	1 581 262	1 667 622	2 138 649	2 570 507	3 892 138	4 675 363	6 037 806	5 446 870	7 852 299	7 857 296	9 274 530
		No *Pf*	–	0	0	0	0	0	0	0	0	–	–	–	–	–	–
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Burundi	Suspected	3 428 846	3 542 424	2 829 030	2 490 095	1 994 514	2 910 545	2 760 683	2 796 362	2 565 593	3 413 317	5 590 736	4 768 314	4 228 015	7 384 501	7 622 162
		No *Pf*	–	–	–	–	–	–	283 950	482 060	371 986	–	–	–	–	–	–
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Cabo Verde	Suspected	6843	7141	8022	6001	9833	7902	8729	8902	9033	21 913	47	26 508	8715	10 621	6894
		No *Pf*	144	107	76	68	45	68	160	36	70	65	47	36	36	46	46
		No *Pv*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		No Other	–	–	–	–	–	–	–	0	0	0	0	0	0	–	–
	Cameroon	Suspected	–	–	–	–	–	277 413	634 507	604 153	1 650 749	1 883 199	1 845 691	3 060 040	2 865 319	3 652 609	3 709 906
		No *Pf*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Central African Republic	Suspected	89 614	140 742	–	78 094	129 367	131 856	114 403	119 477	152 260	175 210	66 484	221 980	468 986	491 074	625 301
		No *Pf*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	295 088
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
	Chad	Suspected	442 246	456 075	517 760	514 918	481 287	507 617	269 094	535 428	495 401	623 839	743 471	528 454	730 364	1 272 841	1 737 195
		No *Pf*	20 977	19 520	21 959	21 532	665	14 770	21 354	24 282	24 015	–	–	–	–	–	–
		No *Pv*	19 101	18 767	21 974	23 663	695	16 898	23 801	24 006	23 742	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Comoros	Suspected	–	–	–	–	43 918	29 554	54 830	53 511	46 426	64 489	159 976	135 248	168 043	185 779	103 545
		No *Pf*	–	–	–	–	–	–	–	–	–	5771	33 791	21 387	43 681	46 032	2203
		No *Pv*	–	–	–	–	–	–	–	–	–	79	528	334	637	72	0
		No Other	–	–	–	–	–	–	–	–	–	132	880	557	–	363	0
	Congo	Suspected	–	–	–	–	–	–	157 757	210 263	243 703	260 888	446 656	277 263	117 640	209 169	290 346
		No *Pf*	–	–	–	–	–	–	–	103 213	117 291	92 855	–	37 744	120 319	43 232	66 323
		No *Pv*	–	–	–	–	–	–	–	0	0	0	–	0	0	0	0
		No Other	–	–	–	–	–	–	–	0	0	0	–	–	–	0	0
	Côte d'Ivoire	Suspected	–	1 193 288	1 109 751	1 136 810	1 275 138	1 280 914	1 253 408	1 277 670	1 359 788	1 874 733	1 721 461	2 607 856	3 423 623	5 982 151	6 418 571
		No *Pf*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Democratic Republic of the Congo	Suspected	967 484	2 200 960	2 642 137	4 389 020	4 136 150	6 337 168	5 011 688	4 163 310	5 929 093	8 929 758	10 568 756	12 018 784	11 993 189	14 871 716	14 647 380
		No *Pf*	889	1517	1727	2418	2659	2844	2043	1885	1254	–	0	0	0	4 103 745	–
		No *Pv*	–	–	–	6	7	110	3	7	27	–	0	0	–	0	–
		No Other	–	–	–	–	–	–	–	–	–	–	0	0	0	0	–
	Equatorial Guinea	Suspected	–	–	–	–	–	–	–	26 068	72 080	90 081	83 639	40 704	45 792	44 561	57 129
		No *Pf*	–	–	–	–	–	–	–	5842	7883	11 603	53 813	22 466	15 169	13 129	17 452
		No *Pv*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African	Eritrea	Suspected	-	138 667	121 011	107 599	65 025	64 056	49 703	80 428	62 449	77 946	96 792	97 479	138 982	134 183	121 755
		No *Pf*	-	8994	5335	8998	3480	7506	5750	9057	5932	3389	9848	10 357	12 467	13 873	23 953
		No *Pv*	-	722	743	1348	639	1567	791	6508	2832	3244	3989	4932	9204	7361	6780
		No Other	-	-	-	-	-	-	-	0	0	0	57	19	-	83	35
	Ethiopia	Suspected	-	3 014 879	3 617 056	4 129 225	5 904 132	4 727 209	3 375 994	2 844 963	3 060 407	4 335 001	5 420 110	5 487 972	5 962 646	9 243 894	7 457 765
		No *Pf*	-	233 218	262 623	291 402	396 621	374 335	293 326	280 106	285 261	640 878	806 577	814 547	946 595	1 687 163	1 250 110
		No *Pv*	-	157 625	164 772	171 387	178 676	158 658	149 020	171 710	173 300	287 114	390 252	665 813	745 983	958 291	868 705
		No Other	-	-	-	-	-	-	-	-	-	0	0	-	-	-	-
	Gabon	Suspected	127 024	132 918	157 440	166 321	230 246	294 348	214 985	287 969	298 150	114 766	233 770	178 822	238 483	256 531	256 183
		No *Pf*	50 810	53 167	62 976	58 212	70 075	70 644	33 458	45 186	40 701	187	2212	-	-	26 432	26 117
		No *Pv*	-	-	-	-	-	-	-	-	-	23	720	-	-	0	0
		No Other	-	-	-	-	-	-	-	-	-	0	2015	-	-	0	1570
	Gambia	Suspected	-	481 590	620 767	540 165	395 043	329 426	427 598	439 798	508 846	479 409	492 062	261 967	862 442	889 494	603 424
		No *Pf*	-	-	-	-	-	-	-	-	-	-	64 108	190 379	271 038	175 126	99 976
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ghana	Suspected	3 349 528	3 044 844	3 140 893	3 552 896	3 416 033	3 452 969	3 511 452	3 123 147	3 349 781	5 489 798	5 056 851	5 067 731	12 578 946	8 444 417	10 636 057
		No *Pf*	-	-	-	-	-	-	-	457 424	918 105	924 095	926 447	593 518	3 755 166	1 629 198	3 415 912
		No *Pv*	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
		No Other	-	-	-	-	-	-	-	19 060	38 254	38 504	102 937	31 238	0	0	0
	Guinea	Suspected	816 539	851 877	850 147	731 911	876 837	850 309	834 835	888 643	657 003	812 471	1 092 554	1 276 057	1 220 574	775 341	1 595 828
		No *Pf*	4800	6238	16 561	4378	103 069	50 452	41 228	28 646	33 405	20 932	20 936	5450	191 421	63 353	660 207
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
	Guinea-Bissau	Suspected	246 316	202 379	194 976	162 344	187 910	204 555	168 462	160 305	168 326	170 255	195 006	300 233	237 398	238 580	309 939
		No *Pf*	-	-	-	-	-	-	-	12 855	-	-	-	-	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Kenya	Suspected	4 216 531	3 262 931	3 342 993	5 395 518	7 577 208	9 181 224	8 926 058	9 610 691	839 903	8 123 689	7 557 454	13 127 058	12 883 521	14 677 837	15 142 723
		No *Pf*	-	-	-	39 383	28 328	-	-	-	839 903	-	898 531	1 002 805	1 453 471	2 335 286	2 808 931
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Liberia	Suspected	-	-	-	-	-	66 043	1 455 807	835 082	994 560	1 200 320	3 087 659	2 887 105	2 441 800	2 202 213	2 433 086
		No *Pf*	-	-	-	-	-	44 875	761 095	80 373	157 920	212 657	212 927	577 641	1 407 455	1 244 220	864 204
		No *Pv*	-	-	-	-	-	-	-	0	0	0	0	-	-	0	0
		No Other	-	-	-	-	-	-	-	0	0	0	0	-	-	0	0
	Madagascar	Suspected	1 417 112	1 411 107	1 621 399	2 228 721	1 489 944	1 260 575	1 111 192	894 213	589 202	717 982	719 967	805 701	980 262	1 071 310	977 228
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Malawi	Suspected	3 646 212	3 823 796	2 784 001	3 358 960	2 871 098	3 688 389	4 498 949	4 786 045	5 185 082	6 183 816	6 851 108	5 734 906	6 528 505	5 787 441	7 703 651
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	-	1 564 984	1 280 892	2 905 310
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mali	Suspected	546 634	612 896	723 077	809 428	1 969 214	962 706	1 022 592	1 291 853	1 045 424	1 633 423	3 324 238	2 628 593	2 171 739	2 849 453	2 590 643
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mauritania	Suspected	-	243 942	224 614	318 120	224 840	223 472	217 977	222 476	202 297	181 935	250 073	162 820	172 374	135 985	188 194
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mayotte, France	Suspected	-	-	-	792	743	500	392	421	346	352	2023	1214	1463	82	15
		No *Pf*	-	-	-	-	-	-	375	414	335	326	386	86	70	77	13
		No *Pv*	-	-	-	-	-	-	3	0	4	8	10	5	2	1	1
		No Other	-	-	-	-	-	-	2	1	7	20	31	0	4	-	1
	Mozambique	Suspected	-	-	-	-	-	-	-	6 155 082	4 831 491	4 310 086	6 097 263	7 059 112	6 170 561	8 200 849	12 626 716
		No *Pf*	-	-	-	-	-	-	-	-	-	-	878 009	663 132	927 841	2 998 874	7 117 648
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African	Namibia	Suspected	-	538 512	445 803	468 259	610 799	339 204	265 595	172 024	155 399	102 956	39 855	74 407	10 844	34 002	186 972
		No *Pf*	-	-	-	-	-	-	-	-	1092	505	556	335	194	136	15 914
		No *Pv*	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0
		No Other	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0
	Niger	Suspected	-	1 340 142	888 345	681 783	766 502	889 986	982 245	3 677 661	4 493 676	4 719 439	10 616 033	3 637 778	5 915 671	5 533 601	7 014 724
		No *Pf*	-	-	-	-	53 637	74 129	44 612	54 515	60 998	77 484	618 578	778 819	2 207 459	2 352 422	3 906 588
		No *Pv*	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
		No Other	-	-	-	-	-	-	-	1113	1245	1581	-	-	-	5102	-
	Nigeria	Suspected	2 476 608	2 253 519	2 605 381	2 608 479	3 310 229	3 532 108	3 982 372	2 969 950	2 834 174	4 295 686	3 873 463	5 221 656	11 789 970	21 659 831	19 555 575
		No *Pf*	-	-	-	-	-	-	-	-	-	-	523 513	-	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rwanda	Suspected	-	1 329 106	1 519 315	1 735 774	1 915 990	2 409 080	2 379 278	2 318 079	2 096 061	3 186 306	2 708 973	1 602 271	3 095 386	3 064 585	4 178 206
		No *Pf*	-	-	-	-	-	-	-	-	316 242	698 745	638 669	208 858	483 470	962 618	1 623 176
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
	Sao Tome and Principe	Suspected	66 250	84 993	94 249	86 546	105 341	73 050	60 819	49 298	179 061	119 877	58 961	117 279	126 897	108 634	91 445
		No *Pf*	-	-	-	-	-	-	-	-	-	-	2219	6363	10 700	9242	1754
		No *Pv*	-	-	-	-	-	-	-	-	-	-	14	4	1	1	0
		No Other	-	-	-	-	-	-	-	-	-	-	0	6	-	0	0
	Senegal	Suspected	1 134 587	974 256	1 000 310	1 472 764	1 240 918	1 418 091	1 645 494	1 337 550	1 031 000	947 514	1 043 632	900 903	897 943	1 119 100	1 079 536
		No *Pf*	44 959	14 261	15 261	28 272	23 171	38 746	49 366	118 332	194 234	19 614	343 670	277 326	281 080	345 889	265 624
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
	Sierra Leone	Suspected	460 881	450 605	514 033	533 340	358 417	243 082	172 707	653 987	1 014 160	1 415 330	2 327 928	1 150 747	2 579 296	2 576 550	2 647 375
		No *Pf*	-	2206	3702	3945	2206	3702	3945	-	-	273 149	218 473	25 511	1 537 322	1 701 958	1 374 476
		No *Pv*	-	0	0	0	0	0	0	-	-	-	-	-	-	-	0
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	South Africa	Suspected	64 624	26 506	15 649	13 459	13 399	7755	14 456	6327	7796	6117	276 669	382 434	152 561	603 932	543 196
		No *Pf*	-	-	-	-	-	-	-	-	-	-	2193	6906	4565	8645	11 563
		No *Pv*	-	-	-	-	-	-	-	-	-	-	0	14	5	0	0
		No Other	-	-	-	-	-	-	-	-	-	-	5	15	-	0	0
	South Sudan[1]	Suspected	-	237 712	462 056	646 673	515 958	337 582	116 473	101 008	201 036	325 634	900 283	795 784	1 125 039	1 855 501	-
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	112 024	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Swaziland	Suspected	29 374	35 582	23 456	19 425	11 320	10 374	11 637	6338	5881	6624	1722	797	626	669	711
		No *Pf*	0	1395	670	342	574	279	155	84	58	106	87	130	345	487	710
		No *Pv*	-	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		No Other	-	-	-	-	-	-	-	0	0	0	0	0	0	1	-
	Togo	Suspected	-	498 826	583 872	490 256	516 942	437 662	566 450	914 590	1 193 316	1 304 772	1 419 928	893 588	1 311 047	1 442 571	1 756 700
		No *Pf*	-	-	-	-	-	-	-	220 521	344 098	191 357	224 080	237 282	260 526	272 855	1 130 234
		No *Pv*	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
		No Other	-	-	-	-	-	-	-	0	0	195	7	23	-	8	17
	Uganda	Suspected	3 552 859	5 624 032	8 079 963	10 422 022	11 697 824	10 869 875	11 539 146	13 281 631	13 020 439	14 397 480	15 332 293	12 522 232	16 845 771	26 145 615	19 201 136
		No *Pf*	-	-	546 015	785 748	861 451	1 082 223	850 050	1 045 378	979 298	1 301 337	1 612 783	231 873	2 662 258	5 518 853	3 631 939
		No *Pv*	-	-	-	-	-	-	-	-	-	-	15 812	0	0	0	0
		No Other	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
	United Republic of Tanzania[2]	Suspected	81 442	404 893	494 245	13 792 604	15 007 921	16 740 283	12 821 375	11 387 904	11 795 223	13 018 946	15 388 319	15 299 205	14 513 120	14 650 226	25 190 092
		No *Pf*	17 734	18 385	16 983	15 705	11 936	7 628	1 585	293	77	211	2 338	4 489	215 567	71 705	107 883
		No *Pv*	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0
		No Other	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0
	Mainland	Suspected	-	324 584	415 293	13 715 090	14 937 115	16 679 237	12 775 877	11 355 047	11 473 817	12 752 090	15 116 242	14 843 487	13 976 370	14 122 269	24 880 179
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	-	212 636	69 459	106 609
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Zanzibar	Suspected	81 442	80 309	78 952	77 514	70 806	61 046	45 498	32 857	321 406	266 856	272 077	455 718	536 750	527 957	309 913
		No *Pf*	17 734	18 385	16 983	15 705	11 936	7628	1585	293	77	211	2338	4489	2931	2246	1274
		No *Pv*	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0
		No Other	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African	Zambia	Suspected	3 337 796	3 838 402	3 760 335	4 346 172	4 078 234	4 121 356	4 731 338	4 248 295	3 080 301	2 976 395	4 229 839	4 607 908	4 695 400	5 465 122	7 859 740
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Zimbabwe	Suspected	-	-	-	-	1 815 470	1 494 518	1 313 458	1 272 731	1 089 322	867 135	912 618	480 011	727 174	1 115 005	1 420 946
		No *Pf*	-	-	-	-	-	-	-	-	-	-	249 379	319 935	276 963	422 633	535 931
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
Region of the Americas	Argentina	Suspected	7949	6685	5043	3977	3018	3018	6353	6353	5157	86	2547	7872	7027	4913	5691
		No *Pf*	1	0	0	0	0	1	1	2	0	0	-	0	0	0	0
		No *Pv*	439	215	125	122	115	251	211	385	130	86	72	18	4	4	4
		No Other	-	-	-	-	-	-	-	-	-	0	0	0	0	0	-
	Bahamas[3]	Suspected	22	4	1	34	17	9	546	6	35	0	27 272	31 013	4985	10 605	-
		No *Pf*	-	-	-	-	2	1	-	-	14	-	-	-	-	-	-
		No *Pv*	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-
		No Other	-	-	-	-	0	0	-	-	1	-	-	-	-	-	-
	Belize	Suspected	18 559	18 173	15 480	15 480	17 358	25 119	25 755	22 134	25 550	26 051	27 366	22 996	20 789	25 351	24 122
		No *Pf*	20	6	0	0	6	32	10	0	0	1	1	1	1	0	0
		No *Pv*	1466	1156	1134	1084	1060	1517	834	845	540	255	149	78	36	26	19
		No Other	-	-	-	-	2	-	-	0	0	0	0	0	0	0	-
	Bolivia (Plurinational State of)	Suspected	143 990	122 933	137 509	158 299	168 307	208 021	214 616	181 816	164 826	133 614	140 857	150 662	132 904	144 049	124 900
		No *Pf*	2536	808	727	793	695	1080	1785	1622	836	574	1592	543	396	1014	341
		No *Pv*	28 932	14 957	13 549	17 319	14 215	19 062	17 210	12 988	8912	8660	13 694	7635	8141	7398	7060
		No Other	1	-	-	2231	-	-	-	-	0	0	0	0	0	0	0
	Brazil	Suspected	2 562 576	2 274 610	2 118 491	2 009 414	2 194 780	2 660 539	2 959 489	2 986 381	2 726 433	2 711 062	2 711 433	2 477 821	2 349 341	1 893 797	1 670 019
		No *Pf*	131 616	81 907	81 014	88 174	110 422	155 169	145 858	93 591	49 358	50 933	51 048	35 706	40 159	35 201	24 654
		No *Pv*	478 212	306 396	267 245	320 378	354 366	450 687	403 383	364 912	266 300	258 271	283 435	231 368	203 018	143 050	118 724
		No Other	932	574	826	298	216	211	228	149	80	112	183	143	105	32	37
	Colombia	Suspected	478 820	747 079	686 635	640 453	562 681	493 562	451 240	589 755	493 135	436 366	521 342	418 159	416 767	327 081	403 532
		No *Pf*	51 730	100 242	88 972	75 730	55 158	43 472	46 147	54 509	22 392	22 141	34 334	15 404	17 778	21 060	20 634
		No *Pv*	92 702	130 991	115 944	105 226	87 083	78 157	73 949	70 753	56 838	57 111	83 255	44 701	51 467	37 862	20 129
		No Other	-	-	35	-	11	17	-	19	917	0	48	16	9	11	5
	Costa Rica	Suspected	61 261	43 053	17 738	9622	9204	12 767	24 498	22 641	17 304	4829	15 599	10 690	7485	16 774	4420
		No *Pf*	12	1	2	14	5	3	32	11	0	1	2	4	1	1	3
		No *Pv*	1867	1362	1008	704	1284	3538	2667	1212	966	261	112	13	5	4	2
		No Other	-	-	-	-	-	-	-	-	0	0	0	0	2	1	1
	Dominican Republic	Suspected	427 297	411 431	391 216	349 717	322 948	397 108	446 839	435 649	381 010	353 336	495 637	477 555	506 583	502 683	416 729
		No *Pf*	1226	1034	1292	1528	2353	3829	3519	2708	1839	1643	2480	1614	950	576	491
		No *Pv*	7	4	4	1	2	8	6	3	1	0	2	2	2	3	5
		No Other	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0
	Ecuador	Suspected	544 646	538 757	403 225	433 244	357 633	358 361	318 132	352 426	387 558	451 732	488 830	460 785	459 157	397 628	370 825
		No *Pf*	48 974	37 491	20 015	10 724	5891	2212	1596	1158	396	551	258	296	80	161	49
		No *Pv*	55 624	71 412	66 742	41 341	22 839	14 836	8267	7306	4495	3569	1630	937	478	217	199
		No Other	-	-	-	-	-	-	-	-	-	0	0	0	0	0	-
	El Salvador	Suspected	279 072	111 830	115 378	102 053	94 819	102 479	113 754	95 857	97 872	83 031	115 256	100 884	124 885	103 748	106 915
		No *Pf*	9	2	0	2	1	2	1	2	1	1	2	3	3	0	0
		No *Pv*	744	360	117	83	111	65	48	38	32	19	22	12	18	7	8
		No Other	-	-	-	-	-	-	-	0	0	0	0	0	0	0	-
	French Guiana, France	Suspected	48 162	44 718	44 718	32 402	32 402	32 402	32 402	32 402	11 994	20 065	14 373	14 429	13 638	22 327	14 651
		No *Pf*	3265	3166	2707	3080	2437	1777	1847	845	406	424	1548	1080	763	1092	348
		No *Pv*	657	657	954	759	600	1637	2227	1804	925	789	476	339	257	337	98
		No Other	214	-	160	-	-	71	27	23	10	6	5	5	2	-	2
	Guatemala	Suspected	246 642	198 114	197 113	156 227	148 729	178 726	168 958	132 410	175 678	156 652	237 075	195 080	186 645	153 731	314 294
		No *Pf*	1474	1044	1841	1310	852	1062	804	196	50	56	35	67	68	152	92
		No *Pv*	50 171	34 772	33 695	29 817	28 103	38 641	30 289	15 182	7148	7024	7163	6707	5278	6062	4839
		No Other	36	-	-	-	-	48	-	-	10	-	-	-	0	0	0
	Guyana	Suspected	209 197	211 221	175 966	185 877	151 938	210 429	202 688	178 005	137 247	169 309	212 863	201 693	196 622	205 903	142 843
		No *Pf*	12 324	12 831	10 599	12 970	12 226	16 438	9818	4677	5741	7542	14 401	20 309	20 329	17 425	5140
		No *Pv*	11 694	14 291	11 296	14 654	16 141	21 255	10 560	6712	5927	6029	8402	9066	11 244	13 953	7173
		No Other	-	-	-	3	446	1291	686	267	147	102	132	96	83	101	41

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Region of the Americas	Haiti	Suspected	21 190	51 067	-	-	30 440	3 541 506	87 951	142 518	168 950	270 438	270 427	184 934	167 772	20 586	258 817
		No *Pf*	16 897	9837	0	0	10 802	21 778	32 739	29 824	36 768	49 535	84 153	32 969	25 423	20 378	17 662
		No *Pv*	0	0	-	-	0	0	0	1	6	0	0	0	0	0	0
		No Other	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0
	Honduras	Suspected	175 577	174 430	178 616	137 891	145 082	153 474	125 162	130 255	119 484	108 529	152 961	152 604	155 165	144 673	151 420
		No *Pf*	1446	938	606	540	834	998	767	813	610	1382	986	619	584	1199	601
		No *Pv*	33 679	23 211	16 617	13 583	16 425	15 011	11 156	9700	7758	7939	8759	7044	5865	4293	2881
		No Other	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0
	Jamaica[3]	Suspected	874	596	725	394	3879	2470	6821	199	30 732	34 149	10 763	5042	3687	-	-
		No *Pf*	-	4	-	-	-	-	-	-	21	18	-	-	-	-	-
		No *Pv*	-	2	-	-	-	-	-	-	1	4	-	-	-	-	-
		No Other	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-
	Mexico	Suspected	2 003 569	1 857 233	1 852 553	1 565 155	1 454 575	1 559 076	1 345 915	1 430 717	1 246 780	1 240 087	1 192 081	1 035 424	1 025 659	1 017 508	900 578
		No *Pf*	131	69	19	44	49	22	16	4	0	1	7	6	9	4	6
		No *Pv*	7259	4927	4605	3775	3357	2945	2498	2357	2357	2702	1226	1124	833	495	658
		No Other	-	-	-	-	-	-	-	-	-	0	0	0	0	0	-
	Nicaragua	Suspected	509 443	482 919	491 689	448 913	492 319	516 313	476 144	537 637	543 173	553 717	554 414	536 105	552 722	536 170	620 977
		No *Pf*	1369	1194	995	1213	1200	1114	336	106	61	93	154	150	236	220	163
		No *Pv*	22 645	9304	6700	5525	5699	5498	2784	1250	701	517	538	775	999	974	1000
		No Other	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
	Panama	Suspected	149 702	156 589	165 796	166 807	171 179	208 582	212 254	204 193	200 574	158 481	141 038	116 588	107 711	93 624	80 701
		No *Pf*	45	39	337	627	882	766	62	48	4	3	20	1	1	6	8
		No *Pv*	991	889	1907	3873	4213	2901	1601	1233	740	775	398	353	843	699	866
		No Other	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0
	Paraguay	Suspected	97 026	71 708	99 338	126 582	97 246	85 942	111 361	92 339	96 313	64 660	62 178	48 611	31 499	24 806	24 832
		No *Pf*	0	4	1	4	1	0	2	2	7	10	5	7	11	9	7
		No *Pv*	6853	2706	2777	1388	693	376	821	1337	333	81	22	3	4	2	1
		No Other	-	-	1	-	-	-	-	-	-	0	0	0	0	1	-
	Peru	Suspected	1 483 816	1 417 423	1 582 385	1 485 012	1 438 925	1 438 925	1 438 925	1 438 925	861 290	892 990	744 650	702 952	759 285	864 648	866 047
		No *Pf*	20 631	17 698	21 184	19 167	20 905	15 058	8437	7766	4768	4044	2374	3018	3501	6843	10 282
		No *Pv*	47 690	61 680	78 000	66 588	72 676	72 611	56 488	43 031	33 895	32 976	29 169	22 018	28 164	36 285	54 394
		No Other	13	11	10	13	10	-	-	-	7	2	3	3	7	11	-
	Suriname	Suspected	63 377	67 369	68 070	43 241	56 975	59 855	45 722	33 992	29 911	34 836	17 133	16 184	21 685	19 736	26 964
		No *Pf*	10 648	13 217	11 140	8782	6738	6931	2331	547	838	929	721	331	126	569	216
		No *Pv*	1673	1229	1648	1047	915	1611	733	509	639	895	817	382	167	359	158
		No Other	811	1549	1388	1153	726	589	225	14	17	18	36	17	2	0	0
	Venezuela (Bolivarian Republic of)	Suspected	261 866	198 000	278 205	344 236	420 165	420 165	479 708	396 338	414 137	370 258	400 495	382 303	410 663	476 764	522 617
		No *Pf*	5491	2705	2533	5394	4230	5725	6576	7724	5127	7944	10 915	10 633	13 302	27 659	27 843
		No *Pv*	24 829	17 224	26 907	26 111	41 972	38 985	30 111	33 621	26 437	27 002	32 710	34 651	39 478	50 938	62 850
		No Other	1	8	12	46	63	38	23	51	60	50	60	6	23	46	15
Eastern Mediterranean	Afghanistan	Suspected	366 865	-	-	-	280 301	548 503	789 186	869 144	935 043	847 666	847 589	936 252	847 933	787 624	743 183
		No *Pf*	5115	-	84 528	44 243	12 789	5917	6216	6283	4355	4026	6142	5581	1231	1877	3000
		No *Pv*	89 240	-	330 083	316 697	229 233	110 527	79 913	85 919	77 219	60 854	63 255	71 968	53 609	43 369	58 362
		No Other	-	-	0	0	0	0	0	0	0	0	0	0	0	0	-
	Djibouti	Suspected	-	-	-	-	-	3969	-	7945	6305	-	-	354	1412	-	39 284
		No *Pf*	-	-	-	-	-	413	1796	210	119	-	1010	-	20	0	-
		No *Pv*	-	-	-	-	-	0	0	0	0	-	0	-	0	0	-
		No Other	-	-	-	-	-	0	0	0	0	-	0	-	0	0	-
	Egypt[3]	Suspected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pf*	17	9	8	44	39	23	27	28	76	81	82	107	180	243	259
		No *Pv*	0	-	2	1	4	0	2	2	4	13	3	9	26	19	54
		No Other	0	-	0	0	0	0	0	0	0	0	0	0	0	0	-
	Iran (Islamic Republic of)	Suspected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pf*	2546	2158	2382	4475	1380	2219	1199	1390	1123	637	421	571	144	299	134
		No *Pv*	-	17 145	13 176	19 087	12 441	16 747	14 710	14 322	10 337	5485	2610	2668	1418	1073	1109
		No Other	-	0	0	0	0	0	0	0	0	0	0	0	0	1	-
	Iraq[3]	Suspected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pf*	-	-	-	1	1	0	0	0	1	0	3	4	0	1	0
		No *Pv*	-	-	-	346	154	47	24	3	5	1	4	7	8	7	2
		No Other	-	-	-	0	0	0	0	0	0	0	0	0	0	0	-

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Eastern Mediterranean	Oman	Suspected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pf*	328	299	275	312	166	159	102	95	95	162	143	101	87	85	134
		No *Pv*	366	336	315	428	449	385	341	602	870	718	1039	1422	1963	1366	865
		No Other	12	16	9	13	8	6	2	2	1	2	3	0	1	0	2
	Pakistan	Suspected	-	7 024 978	7 530 636	8 662 496	6 074 739	8 671 271	8 680 304	9 330 723	8 330 040	7 973 246	8 601 835	8 418 570	8 902 947	7 752 797	8 514 341
		No *Pf*	-	41 771	32 591	39 944	32 761	42 056	37 837	39 871	24 586	37 084	73 857	73 925	97 996	56 573	42 817
		No *Pv*	-	83 504	75 046	85 176	93 385	85 748	86 999	88 699	79 868	95 604	143 136	205 879	228 215	283 661	232 332
		No Other	-	0	0	-	-	0	-	15	36	0	0	0	0	0	0
	Saudi Arabia	Suspected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pf*	-	2360	1999	1234	0	-	984	2349	833	1649	894	1050	1279	974	1155
		No *Pv*	-	678	567	462	-	-	280	515	658	672	1023	1719	2088	1527	1144
		No Other	-	-	-	-	-	-	-	0	0	12	24	19	-	6	6
	Somalia	Suspected	-	-	102 540	28 356	55 423	63 770	-	-	120 060	106 341	220 698	99 403	70 459	85 174	79 653
		No *Pf*	-	-	15 732	7571	11 436	12 516	16 430	16 058	36 167	24 698	5629	-	-	-	-
		No *Pv*	-	-	0	0	0	0	0	617	738	504	0	-	-	-	-
		No Other	-	-	0	0	0	0	0	0	0	0	0	-	-	-	-
	Sudan	Suspected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 207 771
		No *Pf*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pv*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Syrian Arab Republic[3]	Suspected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		No *Pf*	-	14	6	8	9	17	27	35	46	38	22	37	40	21	21
		No *Pv*	-	-	-	-	-	-	-	-	-	1	0	9	1	1	0
		No Other	-	-	-	-	-	-	-	-	-	0	3	0	1	0	-
	Yemen	Suspected	-	-	667 794	612 693	611 552	629 380	962 017	740 940	900 735	899 320	835 018	804 940	891 394	927 821	725 169
		No *Pf*	-	-	73 667	47 782	47 306	42 627	53 887	65 268	42 796	52 853	77 301	59 696	109 504	102 369	67 274
		No *Pv*	-	-	1659	1474	1297	1442	1019	2339	745	589	966	478	398	408	239
		No Other	-	-	-	-	-	-	-	0	4	3	2	33	-	0	0
European	Armenia[4]	Suspected	571	269	278	223	393	411	460	1315	31 231	31 467	31 026	-	-	-	-
		No *Pf*	1	0	0	4	2	0	0	1	1	0	1	-	-	-	-
		No *Pv*	140	79	52	25	45	7	0	0	0	0	0	-	-	-	-
		No Other	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
	Azerbaijan	Suspected	527 688	536 260	507 252	536 822	545 145	515 144	498 697	465 033	408 780	451 436	456 652	449 168	497 040	432 810	399 925
		No *Pf*	0	1	0	0	0	0	0	2	1	0	2	2	1	4	2
		No *Pv*	1526	1056	506	482	386	242	143	109	72	80	50	6	3	0	0
		No Other	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	Georgia[3]	Suspected	173	3575	6145	5457	3365	5169	4400	3400	4398	4120	2368	2032	1046	192	440
		No *Pf*	0	0	1	2	1	0	1	0	1	5	0	3	3	6	6
		No *Pv*	245	438	473	314	255	155	59	24	7	1	0	3	2	1	0
		No Other	0	0	0	0	0	0	0	1	0	1	0	0	0	-	-
	Kyrgyzstan[3]	Suspected	70 500	72 020	69 807	144 070	79 895	114 316	74 729	62 444	40 833	33 983	30 190	27 850	18 268	54 249	35 600
		No *Pf*	0	0	1	0	0	0	1	0	0	0	0	1	1	1	0
		No *Pv*	12	28	2742	468	93	226	318	96	18	4	6	4	2	3	0
		No Other	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	Russian Federation[3]	Suspected	795	898	642	533	382	205	143	35 784	28 340	27 382	33 024	28 311	-	-	-
		No *Pf*	60	-	48	51	43	31	41	43	47	62	63	39	-	-	-
		No *Pv*	-	-	-	-	-	-	-	76	46	40	34	40	-	-	-
		No Other	-	-	-	-	-	-	-	4	3	5	5	6	-	-	-
	Tajikistan	Suspected	233 785	248 565	244 632	296 123	272 743	216 197	175 894	159 232	158 068	165 266	173 523	173 367	209 239	213 916	200 241
		No *Pf*	831	826	509	252	151	81	28	7	2	1	1	5	2	1	0
		No *Pv*	18 233	10 561	5651	5176	3437	2228	1316	628	316	164	111	73	31	13	7
		No Other	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	Turkey	Suspected	1 597 290	1 550 521	1 320 010	1 187 814	1 158 673	1 042 509	934 839	775 502	616 570	606 875	507 841	421 295	337 830	255 125	189 854
		No *Pf*	7	11	12	12	13	32	29	29	23	16	50	97	131	191	204
		No *Pv*	11 424	10 799	10 209	9209	5289	2052	767	329	191	65	28	30	243	94	41
		No Other	-	-	-	-	0	0	0	1	3	0	1	-	-	-	4
	Turkmenistan[4]	Suspected	50 105	50 075	59 834	72 643	71 377	56 982	58 673	65 666	75 524	94 237	81 784	-	-	-	-
		No *Pf*	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
		No *Pv*	24	8	18	7	3	1	1	0	1	0	0	-	-	-	-
		No Other	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
European	Uzbekistan[3]	Suspected	735 164	691 500	735 164	812 543	893 187	917 843	924 534	858 968	883 807	916 839	921 364	886 243	805 761	908 301	812 347
		No *Pf*	1	0	1	0	0	0	3	2	0	1	0	1	1	2	1
		No *Pv*	125	77	72	74	66	102	73	87	27	3	5	0	0	1	0
		No Other	0	0	–	0	0	0	0	0	0	0	0	0	0	–	–
South-East Asia	Bangladesh	Suspected	742 539	516 052	527 577	679 981	512 876	462 322	341 293	270 137	526 701	569 767	496 616	390 102	309 179	93 926	125 201
		No *Pf*	39 475	39 274	46 418	41 356	46 402	37 679	24 828	46 803	70 281	18 350	52 049	49 194	9464	3602	9727
		No *Pv*	16 124	14 942	15 851	13 298	12 492	10 442	8029	13 063	14 409	6853	3824	2579	396	262	489
		No Other	–	–	–	–	–	–	–	–	–	–	0	0	0	0	0
	Bhutan	Suspected	76 445	65 974	74 696	61 246	54 892	60 152	66 079	51 446	47 389	62 790	54 760	44 494	42 512	31 632	28 716
		No *Pf*	2738	2915	3207	1518	966	853	772	379	181	644	175	102	33	14	17
		No *Pv*	3197	2805	3015	2126	1580	871	963	414	148	413	261	92	47	31	31
		No Other	–	–	–	–	–	–	–	0	0	0	0	0	0	–	–
	Democratic People's Republic of Korea	Suspected	204 428	300 000	354 503	76 104	33 803	11 507	9353	7985	24 299	34 818	25 147	26 513	40 925	72 719	38 878
		No *Pf*	–	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		No *Pv*	–	115 615	98 852	16 538	15 827	6728	6913	4795	16 989	14 845	13 520	16 760	21 850	14 407	10 535
		No Other	–	–	–	–	–	–	–	0	0	0	0	0	0	0	0
	India	Suspected	86 790 375	90 389 019	91 617 725	99 136 143	97 111 526	104 120 792	106 606 703	94 855 000	95 734 579	112 496 076	119 279 429	119 470 044	122 159 270	127 891 198	138 628 331
		No *Pf*	1 047 218	1 005 236	897 446	857 101	890 152	805 077	840 360	744 049	779 163	842 705	834 364	665 004	524 370	463 846	722 546
		No *Pv*	984 572	1 080 248	943 781	1 012 302	1 025 211	1 011 492	944 769	767 851	750 687	723 697	765 622	645 652	534 129	417 884	379 659
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Indonesia	Suspected	3 178 212	2 737 927	2 660 674	2 482 906	2 445 538	2 113 265	1 320 581	2 142 747	2 106 957	–	2 205 293	2 092 187	2 051 425	1 833 256	1 575 907
		No *Pf*	100 716	82 927	93 419	74 968	123 962	146 353	165 108	158 135	141 127	221 270	242 041	232 197	229 255	191 200	142 807
		No *Pv*	156 277	184 665	180 374	148 097	180 974	169 041	182 489	175 657	125 150	196 666	221 176	187 989	187 583	150 985	107 260
		No Other	–	–	–	–	–	–	–	–	–	503	2547	2261	981	1342	1960
	Myanmar	Suspected	843 087	954 155	1 016 514	1 020 477	883 399	787 691	820 290	1 159 516	1 230 444	1 136 064	1 277 568	1 210 465	1 423 966	1 364 792	890 913
		No *Pf*	95 499	130 029	133 187	138 178	114 523	124 644	149 399	152 027	170 630	124 251	72 995	62 624	342 593	234 986	110 324
		No *Pv*	21 802	35 783	35 030	35 151	34 045	37 014	50 667	53 351	52 256	40 167	29 944	28 966	135 388	98 860	41 866
		No Other	–	–	–	–	–	–	–	433	288	319	346	162	–	25	5
	Nepal	Suspected	140 768	266 917	304 200	383 322	293 836	361 936	327 981	265 997	302 774	270 798	213 353	188 702	243 432	169 464	296 979
		No *Pf*	560	428	2165	1195	743	1181	1358	1391	792	762	766	249	612	295	315
		No *Pv*	7056	6216	10 621	8200	3892	5691	3932	3870	3096	2760	2349	1631	1480	1659	1154
		No Other	–	–	–	–	–	–	–	–	–	–	0	0	0	0	–
	Sri Lanka	Suspected	1 781 372	1 353 386	1 390 850	1 192 259	1 198 181	974 672	1 076 121	1 047 104	1 047 104	909 632	1 001 107	985 060	948 250	1 236 580	1 069 817
		No *Pf*	59 650	10 600	4848	1273	549	134	27	8	47	29	28	17	41	42	20
		No *Pv*	150 389	55 922	36 563	9237	3171	1506	564	191	623	529	702	158	45	52	28
		No Other	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
	Thailand	Suspected	4 403 739	4 100 778	3 819 773	3 256 939	3 012 710	2 524 788	2 280 070	2 041 733	1 931 768	1 884 820	1 777 977	1 450 885	1 130 757	1 838 150	1 756 528
		No *Pf*	43 717	29 061	20 389	19 024	13 371	14 670	14 124	16 667	12 254	9688	9548	5857	11 553	14 645	14 331
		No *Pv*	37 975	34 467	24 166	18 331	13 319	14 921	15 991	16 495	13 886	13 616	13 401	8608	17 506	15 573	20 513
		No Other	–	–	–	–	–	–	–	16	10	23	20	13	–	3084	3077
	Timor-Leste	Suspected	15 212	83 049	120 344	83 785	242 957	185 367	223 002	215 402	215 338	198 867	266 384	225 772	182 854	178 200	117 107
		No *Pf*	–	–	26 651	33 411	39 164	43 093	37 896	34 325	34 678	29 664	28 818	15 981	1962	373	203
		No *Pv*	–	–	11 148	15 392	16 158	15 523	13 477	12 544	11 295	12 160	11 432	3758	2288	512	139
		No Other	–	–	–	–	–	–	–	0	0	0	0	0	0	0	0
Western Pacific	Cambodia	Suspected	281 444	202 179	187 213	208 801	183 062	165 382	207 463	200 050	198 794	210 856	193 210	216 712	194 263	152 137	142 242
		No *Pf*	46 150	37 105	33 010	36 338	31 129	17 482	24 779	17 094	37 014	18 637	9483	8637	19 867	9510	14 796
		No *Pv*	4505	4408	4386	5179	5709	9004	7551	4987	4625	6362	4794	5155	19 575	11 267	10 356
		No Other	–	–	–	–	–	–	–	–	–	0	0	0	–	0	0
	China	Suspected	–	5 397 517	5 788 432	4 776 469	4 331 038	3 892 885	4 076 104	4 062 585	4 435 793	4 642 479	7 118 649	9 190 401	6 918 732	5 554 995	4 403 633
		No *Pf*	–	3732	5753	3497	3879	3588	2808	1754	1327	948	1295	1410	1419	3091	1855
		No *Pv*	–	17 295	19 581	24 852	23 138	18 187	32 345	27 550	15 323	8214	3675	1907	1080	930	850
		No Other	–	–	–	–	–	–	–	141	105	125	20	50	–	184	216
	Lao People's Democratic Republic	Suspected	496 070	303 306	309 688	326 297	218 884	173 698	210 927	275 602	311 395	266 096	280 549	221 390	369 976	339 013	294 542
		No *Pf*	38 271	25 851	20 696	18 307	15 648	13 106	28 347	17 178	18 938	5332	4401	5770	38 461	25 494	25 445
		No *Pv*	1689	1204	712	574	491	473	316	193	247	176	122	442	7634	12 537	22 625
		No Other	–	–	–	–	–	–	–	7	21	0	1	14	–	1	1
	Malaysia	Suspected	2 694 991	2 671 828	2 593 385	2 380 226	2 250 185	1 994 216	1 973 918	2 111 163	2 143 247	1 565 982	1 619 074	1 600 439	1 566 872	1 576 012	1 443 958
		No *Pf*	6000	5643	5486	2756	2496	2222	1790	1979	2559	2129	1854	1126	894	663	409
		No *Pv*	5953	6315	4921	3127	3167	2729	2774	2862	3820	3379	3812	2422	1461	969	732
		No Other	–	–	–	–	–	–	–	615	1011	1502	984	1758	–	2218	2782

WHO region	Country/area		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Western Pacific	Papua New Guinea	Suspected	1 897 579	1 802 857	1 739 219	1 783 145	2 000 261	1 962 493	1 816 963	1 779 343	1 769 032	1 507 122	1 505 393	1 279 140	1 113 528	1 454 166	922 417
		No *Pf*	63 591	74 117	58 403	54 653	63 053	62 926	62 038	67 929	66 202	50 349	60 824	60 317	58 747	120 748	200 215
		No *Pv*	14 721	18 113	14 187	14 055	18 730	22 833	22 744	16 239	16 806	11 472	13 171	9654	7108	7579	78 846
		No Other	–	–	–	–	–	–	–	2787	1444	1024	1990	632	–	1279	2125
	Philippines	Suspected	36 596	34 968	37 005	48 441	50 850	593 996	432 111	408 254	278 652	352 006	301 577	327 125	333 084	320 089	314 820
		No *Pf*	25 912	18 006	22 831	32 948	29 018	20 033	24 515	9016	12 039	14 074	12 038	7043	4774	5051	3995
		No *Pv*	–	–	–	–	–	6482	8839	3622	4806	4951	2885	2380	2189	1357	834
		No Other	–	–	–	–	–	–	–	17	197	262	175	127	–	67	74
	Republic of Korea	Suspected	4183	2556	1799	1171	864	1369	2051	2227	1052	1345	1772	838	555	443	638
		No *Pf*	–	–	–	–	–	–	–	–	11	26	51	56	54	33	55
		No *Pv*	–	–	–	–	–	–	–	2227	1052	1319	1721	782	501	397	579
		No Other	–	–	–	–	–	–	–	–	–	–	0	0	0	3	1
	Solomon Islands	Suspected	601 612	594 690	556 356	416 728	643 908	633 796	657 110	396 169	338 244	282 297	284 931	254 506	249 520	245 014	233 803
		No *Pf*	46 703	50 806	50 090	64 910	64 449	54 001	54 441	48 751	29 576	19 813	23 092	14 537	14 980	13 640	10 559
		No *Pv*	21 322	25 649	24 822	27 399	25 927	22 515	20 971	16 653	11 173	8544	12 281	8665	9339	11 628	7845
		No Other	–	–	–	–	–	–	–	139	84	–	–	0	–	0	0
	Vanuatu	Suspected	58 679	48 422	75 046	82 670	80 879	86 170	62 637	52 958	52 420	44 960	48 088	32 656	33 273	28 943	35 570
		No *Pf*	3226	3402	7016	8406	6999	3817	3522	2484	1623	1979	1738	851	1727	1039	279
		No *Pv*	2972	4236	7210	6582	6350	4453	4405	2987	1850	1632	2265	1224	1680	1342	703
		No Other	–	–	–	–	–	–	–	0	0	4	10	2	0	0	0
	Viet Nam	Suspected	2 883 456	2 950 863	3 054 693	2 835 799	2 778 295	2 793 458	3 024 558	3 755 566	1 409 765	2 907 219	2 803 918	3 312 266	3 436 534	3 115 804	2 786 135
		No *Pf*	58 377	52 801	36 961	29 786	19 228	14 394	18 140	11 470	8901	12 719	12 763	10 101	11 448	9532	8532
		No *Pv*	15 935	15 898	10 846	9004	5681	5102	4497	4737	2348	3206	4466	5602	7220	6901	7220
		No Other	–	–	–	–	–	–	–	0	0	0	0	0	0	0	0

Pf, P. falciparum ; *Pv, P. vivax*

Suspected cases: are calculated by adding «Examined cases» to «Presumed cases».
Presumed cases: are calculated by subtracting «Confirmed cases» from «Presumed and Confirmed cases».
1 In May 2013 South Sudan was reassigned to the WHO African Region (WHA resolution 66.21, http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R21-en.pdf)
2 Where national totals for the United Republic of Tanzania are unavailable, refer to the sum of Mainland and Zanzibar
3 There is no local transmission
4 Armenia and Turkmenistan are certified malaria free countries, but are included in this listing for historical purposes

Annex 6D – Reported malaria deaths, 2000–2014

WHO region	Country/area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
African	Algeria	2	1	-	-	-	-	-	-	0	1	5	1	0	3	0
	Angola	9510	9473	14 434	38 598	12 459	13 768	10 220	9812	9465	10 530	8114	6909	5736	7300	5714
	Benin	-	468	707	560	944	322	1226	1290	918	1375	964	1753	2261	2288	1869
	Botswana	-	29	23	18	19	11	40	6	12	6	8	8	3	7	22
	Burkina Faso	-	4233	4032	4860	4205	5224	8083	6472	7834	7982	9024	7001	7963	6294	5632
	Burundi	691	417	483	425	689	776	434	167	595	1183	2677	2233	2263	3411	2974
	Cabo Verde	-	0	2	4	4	2	8	2	2	2	1	1	1	0	2
	Cameroon	-	-	-	-	-	836	930	1811	7673	4943	4536	3808	3209	4349	4398
	Central African Republic	439	535	-	417	859	668	865	578	456	667	526	858	1442	1026	635
	Chad	712	957	98	1021	13	558	837	617	1018	221	886	1220	1359	1881	1720
	Comoros	-	-	-	-	28	92	56	20	47	-	53	19	17	15	0
	Congo	-	-	-	-	-	-	-	113	143	116	-	892	623	2870	271
	Côte d'Ivoire	-	-	-	-	-	-	-	797	1249	18 156	1023	1389	1534	3261	2069
	Democratic Republic of the Congo	3856	416	2152	989	13 613	15 322	12 970	14 372	17 940	21 168	23 476	23 748	21 601	30 918	25 502
	Equatorial Guinea	-	-	-	-	-	-	-	-	4	23	30	52	77	66	-
	Eritrea	-	133	86	79	24	49	47	42	19	23	27	12	30	6	15
	Ethiopia	-	1681	1607	2138	3327	1086	1357	991	1169	1121	1581	936	1621	358	213
	Gabon	2016	1693	1141	692	466	353	238	216	156	197	182	74	134	273	159
	Gambia	-	275	259	192	153	426	150	424	403	240	151	440	289	262	170
	Ghana	6108	1717	2376	2103	1575	2037	3125	4622	3889	3378	3859	3259	2855	2506	2200
	Guinea	626	517	440	586	528	490	-	472	441	586	735	743	979	108	1067
	Guinea-Bissau	-	635	780	1137	565	565	507	370	487	369	296	472	370	418	357
	Kenya	48 767	48 286	47 697	51 842	25 403	44 328	40 079	-	-	-	26 017	713	785	360	472
	Liberia	-	-	-	-	-	41	877	310	345	1706	1422	-	1725	1191	2288
	Madagascar	591	742	575	817	715	699	441	428	355	348	427	398	552	641	551
	Malawi	-	3355	5775	4767	3457	5070	6464	7486	8048	8915	8206	6674	5516	3723	4490
	Mali	748	562	826	1309	1012	1285	1914	1782	1227	2331	3006	2128	1894	1680	2309
	Mauritania	-	-	-	-	-	-	67	142	-	91	211	77	106	25	19
	Mayotte, France	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
	Mozambique	-	-	-	-	-	-	-	5816	4424	3747	3354	3086	2818	2941	3245
	Namibia	-	1728	1504	1106	1185	1325	571	181	152	68	63	36	4	21	61
	Niger	1244	2366	2769	2248	1333	2060	1150	1358	2461	2159	3929	2802	2825	2209	2691
	Nigeria	-	4317	4092	5343	6032	6494	6586	10 289	8677	7522	4238	3353	7734	7878	6082
	Rwanda	-	4275	3167	2679	2362	2581	2486	1772	566	809	670	380	459	409	496
	Sao Tome and Principe	254	248	321	193	169	85	26	3	16	23	14	19	7	11	0
	Senegal	1275	1515	1226	1602	1524	1587	1678	1935	741	574	553	472	649	815	500
	Sierra Leone	-	328	461	157	126	50	90	324	871	1734	8188	3573	3611	4326	2848
	South Africa	424	81	96	142	88	63	87	37	43	45	83	54	72	105	174
	South Sudan[1]	-	-	-	-	-	-	-	-	263	254	1053	406	1321	1311	-
	Swaziland	-	62	46	30	28	17	27	17	10	13	8	1	3	4	4
	Togo	-	1394	1661	1130	1183	1024	819	1236	2663	1556	1507	1314	1197	1361	1205
	Uganda	-	-	-	-	-	-	4252	7003	2372	6296	8431	5958	6585	7277	5921
	United Republic of Tanzania[2]	379	1 228	815	15 251	19 859	18 322	20 962	12 593	12 497	16 776	15 867	11 806	7 820	8 528	5 373
	Mainland	-	838	441	14 943	19 547	18 075	20 825	12 529	12 405	16 696	15 819	11 799	7812	8526	5368
	Zanzibar	379	390	374	308	312	247	137	64	92	80	48	7	8	2	5
	Zambia	-	9369	9021	9178	8289	7737	6484	6183	3781	3862	4834	4540	3705	3548	3257
	Zimbabwe	-	-	1844	1044	1809	1916	802	401	232	108	255	451	351	352	406
Region of the Americas	Argentina	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Bahamas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	Belize	0	0	0	-	1	0	1	0	0	0	0	0	0	0	0
	Bolivia (Plurinational State of)	11	0	4	1	3	0	0	0	0	0	0	0	0	0	1
	Brazil	245	142	95	104	102	123	110	93	68	85	76	70	60	41	36
	Colombia	124	168	162	118	126	87	77	68	54	28	42	23	24	10	17
	Costa Rica	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Dominican Republic	6	17	11	12	16	16	10	17	11	14	15	10	8	5	4
	Ecuador	66	84	64	46	37	22	9	8	5	6	4	2	1	4	-
	El Salvador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	French Guiana, France	0	3	2	5	1	2	5	-	2	1	1	2	2	3	0
	Guatemala	0	0	0	0	2	4	2	-	0	0	0	0	0	1	1

WHO region	Country/area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Region of the Americas	Guyana	29	30	28	44	38	33	20	-	11	20	24	36	35	14	11
	Haiti	16	70	77	109	24	29	32	28	17	7	8	5	6	10	9
	Honduras	0	0	0	0	0	1	0	-	2	1	3	2	1	1	2
	Jamaica	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
	Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Nicaragua	4	2	8	7	1	6	1	0	0	0	1	1	2	0	0
	Panama	1	1	2	4	2	1	1	1	1	0	1	-	1	0	0
	Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Peru	20	25	12	9	6	4	6	2	2	2	0	1	7	4	4
	Suriname	24	23	15	18	7	1	1	1	0	0	1	1	0	1	0
	Venezuela (Bolivarian Republic of)	24	28	23	40	35	17	11	16	9	11	18	16	10	6	5
Eastern Mediterranean	Afghanistan	-	-	-	-	-	0	-	25	46	32	22	40	36	24	32
	Djibouti	-	-	-	-	-	-	29	1	-	0	0	0	0	17	28
	Egypt	-	-	-	-	-	-	0	0	2	2	2	4	-	3	2
	Iran (Islamic Republic of)	4	2	2	5	1	1	1	3	3	-	2	0	-	2	0
	Iraq	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0
	Morocco[4]	-	-	-	-	-	1	2	2	1	1	2	-	4	-	9
	Oman	-	-	-	-	-	0	0	0	2	2	0	0	0	0	0
	Pakistan	-	-	-	-	-	52	9	24	-	-	-	4	260	244	56
	Saudi Arabia	-	0	0	0	0	0	0	2	0	0	0	2	0	0	0
	Somalia	-	-	8	54	79	15	58	45	49	45	6	5	10	23	14
	Sudan	2162	2252	2125	2479	1814	1789	1193	1254	1125	1142	1023	612	618	685	823
	Syrian Arab Republic[3]	-	-	-	-	-	2	2	1	1	1	0	0	1	1	4
	Yemen	-	-	-	-	-	-	73	-	-	38	92	75	72	55	19
European	Armenia[4]	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
	Azerbaijan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Georgia	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Kyrgyzstan	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	Russian Federation	2	3	2	4	5	3	4	3	2	1	1	1	-	-	-
	Tajikistan	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Turkey	0	0	0	0	0	0	0	1	3	1	0	4	0	3	1
	Turkmenistan[4]	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
	Uzbekistan	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
South-East Asia	Bangladesh	484	470	598	574	505	501	508	228	154	47	37	36	11	15	45
	Bhutan	15	14	11	14	7	5	7	2	2	4	2	1	1	0	0
	Democratic People's Republic of Korea	-	-	-	-	-	-	-	0	0	0	0	0	-	-	0
	India	892	1015	973	1006	949	963	1708	1311	1055	1144	1018	754	519	440	561
	Indonesia	833	-	-	-	508	88	494	-	669	900	432	388	252	45	64
	Myanmar	2556	2814	2634	2476	1982	1707	1647	1261	1087	972	788	581	403	236	92
	Nepal	-	1	3	5	7	10	42	3	-	8	6	2	0	0	0
	Sri Lanka	77	52	30	4	1	0	1	1	0	1	0	0	0	0	0
	Thailand	625	424	361	204	230	161	113	97	101	70	80	43	37	47	38
	Timor-Leste	-	-	-	-	65	71	68	60	33	53	58	16	3	3	1
Western Pacific	Cambodia	608	476	457	492	382	296	396	241	209	279	151	94	45	12	18
	China	31	27	42	52	31	48	37	18	23	10	19	33	14	23	24
	Lao People's Democratic Republic	350	242	195	187	105	77	21	14	11	5	24	17	44	28	4
	Malaysia	35	46	38	21	35	33	21	18	30	26	33	18	16	14	9
	Papua New Guinea	617	562	647	537	619	725	668	559	628	604	616	523	381	307	203
	Philippines	536	439	71	162	167	145	124	73	56	24	30	12	16	12	10
	Republic of Korea	0	0	0	0	0	0	0	1	0	1	2	2	0	2	0
	Solomon Islands	38	55	61	71	51	38	12	15	21	53	34	19	18	18	23
	Vanuatu	3	4	13	14	3	5	1	5	4	2	1	1	0	0	0
	Viet Nam	142	91	50	50	34	18	41	20	25	26	21	14	8	6	6
Regional summary	African	77 642	103 036	110 516	152 657	114 045	137 269	136 955	102 490	103 664	131 224	150 490	104 069	104 106	116 336	97 381
	Region of the Americas	570	593	503	518	401	346	286	234	182	176	194	169	157	100	90
	Eastern Mediterranean	2166	2254	2135	2538	1894	1860	1367	1357	1229	1263	1149	742	1001	1054	959
	European	2	3	2	4	5	3	4	5	5	2	1	6	0	3	1
	South-East Asia	5482	4790	4610	4283	4254	3506	4588	2963	3101	3199	2421	1821	1226	786	801
	Western Pacific	2 360	1 942	1 574	1 586	1 427	1 385	1 321	964	1 007	1 030	931	733	542	422	297
	Total	**88 222**	**112 618**	**119 340**	**161 586**	**122 026**	**144 369**	**144 521**	**108 013**	**109 188**	**136 894**	**155 186**	**107 540**	**107 032**	**118 701**	**99 529**

Deaths reported before 2000 can be presumed and confirmed or only confirmed deaths depending on the country.

1 In May 2013 South Sudan was reassigned to the WHO African Region (WHA resolution 66.21, http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R21-en.pdf)

2 Where national totals for the United Republic of Tanzania are unavailable, refer to the sum of Mainland and Zanzibar

3 There is no local malaria transmission

4 Armenia, Morocco and Turkmenistan are certified malaria free countries, but are included in this listing for historical purposes

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

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