



General Assembly

Distr.: General
25 April 2022

Original: English

Seventy-sixth session

Agenda item 14

**2001–2010: Decade to Roll Back Malaria in Developing
Countries, Particularly in Africa**

Consolidating gains and accelerating efforts to control and eliminate malaria in developing countries, particularly in Africa, by 2030

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly the report of the Director General of the World Health Organization, submitted in accordance with Assembly resolution [75/328](#).



**Report of the Director General of the World Health Organization
on consolidating gains and accelerating efforts to control and
eliminate malaria in developing countries, particularly in Africa,
by 2030**

Summary

The present report is submitted in accordance with General Assembly resolution [75/328](#). The report provides a review of progress in the implementation of that resolution, focusing on the adoption and scaling up of interventions recommended by the World Health Organization in malaria-endemic countries. The report also elaborates on the challenges limiting the full achievement of the targets and provides recommendations for ensuring that progress towards achieving the goals of the Global Technical Strategy for Malaria 2016–2030 of the World Health Organization is accelerated in the coming years.

I. Introduction

1. While malaria is a preventable and treatable disease, it continues to have a devastating impact on the health and livelihood of people around the world. In 2020, there were an estimated 241 million cases of malaria and 627,000 malaria-related deaths in 85 countries. Children under 5 years of age in sub-Saharan Africa account for more than two thirds of global deaths from malaria.

2. The present report highlights progress and challenges in the control and elimination of malaria in the context of General Assembly resolution 75/328. It draws heavily on the *World Malaria Report 2021*, a World Health Organization (WHO) analysis based on the latest available data (2020) received from malaria-endemic countries and organizations supporting global efforts to combat malaria. Data from 2021 are currently being consolidated and reviewed by WHO.

3. In May 2015, the World Health Assembly endorsed the Global Technical Strategy for Malaria 2016–2030, a technical framework for all countries working to control and eliminate malaria. The Strategy sets the goals of reducing malaria case incidence and death rates by at least 90 per cent by 2030 (compared with 2015 levels), eliminating malaria in at least 35 countries and preventing the re-establishment of malaria in all countries that are malaria-free. Milestones for 2020 included reductions in case incidence and mortality rates of at least 40 per cent and the elimination of malaria in at least 10 countries. For 2025, the milestones are a reduction in case incidence and mortality rates of at least 75 per cent and the elimination of malaria in at least 20 countries. In May 2021, WHO published an updated global strategy¹ that considers experiences and lessons learned since 2015. In its resolution WHA74.9 of 31 May 2021,² entitled “Recommitting to accelerate progress towards malaria elimination”, the World Health Assembly urged member States to step up the pace of progress in the response against malaria through plans and approaches that are consistent with the updated strategy.

4. Malaria is included under target 3.3 of the Sustainable Development Goals. The target is aimed at ending the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases by 2030. With respect to malaria, WHO interprets that target to mean the attainment of the goals of the Global Technical Strategy. Expanded access to malaria interventions will also contribute to the broader health and development agenda embodied in the Goals and to global efforts to move towards universal health coverage.

5. In recent years, the pace of progress in the global malaria response has levelled off and, in many countries hardest hit by the disease, malaria is on the rise. According to the latest *World Malaria Report*, the 2020 strategic mortality and morbidity milestones of the Global Technical Strategy were not met, the challenge having been compounded by insufficient funding for malaria control. Urgent and concerted action is needed to set the global response to malaria back on track, particularly in countries with a high burden of malaria. The “High burden to high impact” approach, catalysed by WHO and the RBM Partnership to End Malaria starting in 2018, aims towards intensifying support for countries with the highest burden of malaria.

6. In 2020, the coronavirus disease (COVID-19) pandemic emerged as a serious additional challenge to malaria responses and to the delivery of essential health services worldwide. In the early days of the pandemic, WHO and its partners had raised concerns that lockdowns and other COVID-19 restrictions could lead to major

¹ WHO, *Global Technical Strategy for Malaria 2016–2030: 2021 Update* (Geneva, 2021). Available from www.who.int/publications/i/item/9789240031357.

² Available at https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_R9-en.pdf.

disruptions to essential services for the prevention, detection and treatment of malaria. Malaria-endemic countries and their partners succeeded in averting the worst-case scenario of malaria deaths projected by WHO by mounting an urgent and strenuous response. However, moderate disruptions to malaria services during the pandemic led to considerable increases in cases and deaths; in 2020, there were an estimated 14 million more malaria cases and 69,000 more malaria deaths than in 2019.

7. The situation is precarious, especially in sub-Saharan Africa, where the malaria burden remains unacceptably high and a convergence of threats poses an added challenge to disease control efforts. In 2020 and 2021, more than 120 million people living in 21 malaria-endemic countries faced a number of humanitarian emergencies, extending beyond COVID-19 and ranging from Ebola outbreaks to conflicts and flooding. Other threats converging in African countries include the emergence of partial resistance to the most commonly used drug treatment; the spread of *Plasmodium falciparum* parasite mutations that are undermining the effectiveness of rapid diagnostic tests; mosquitoes that are resistant to the insecticides used in key vector control tools; and an invasive malaria vector that thrives in urban and rural areas.

8. The success of efforts to control and eliminate malaria is measured through an analysis of trends in the disease burden, access to key malaria control tools and progress towards the goals of the Global Technical Strategy. WHO recommends a multipronged strategy to reduce the malaria burden, including the scaling up of vector control interventions, preventive therapies, diagnostic testing, quality-assured treatment and robust malaria surveillance. Since October 2021, WHO has also recommended the broad use of the RTS,S malaria vaccine for the prevention of *P. falciparum* malaria among children living in regions with moderate to high transmission. It is to be noted that all of the most up-to-date malaria guidance provided by WHO can be found in the consolidated *WHO Guidelines for Malaria*.³ Interventions should be informed by local data and tailored to the local context. The strengthening of health systems and the provision of a multisectoral response are also critical elements of the Strategy.

9. Malaria disproportionately affects the most vulnerable populations, including the rural poor, pregnant women, children, migrants, refugees, prisoners and indigenous populations. For those populations, social inequality and political marginalization may impede access to health services and there may be additional barriers created by language, culture, poor sanitation, lack of access to health information, lack of informed consent in testing and treatment, and inability to pay the user fees for medical services. WHO is committed to providing guidance on how to integrate sustainable approaches that advance health equity, promote and protect human rights, are gender-responsive and address social determinants into WHO programmes, institutional mechanisms and support at the country level.

II. Current situation

10. Despite a period of unprecedented success in global malaria control from 2000 to 2015, progress in recent years has stalled and many high-burden countries are losing ground. Between 2015 and 2020, the total number of estimated malaria cases worldwide increased from 224 million to 241 million. The estimated number of malaria deaths in 2020 stood at 627,000, compared with 562,000 in 2015. As a result of these recent trends, critical 2020 milestones of the Global Technical Strategy were missed. In 2020, the global malaria case incidence rate, 59 cases per 1,000 people at risk

³ Available at www.who.int/publications/i/item/guidelines-for-malaria.

against a target of 35, was off track by 40 per cent. The global mortality rate, 15.3 deaths per 100,000 people at risk against a target of 8.9, was off track by 42 per cent.

11. *World Malaria Report 2021* applied a new methodology that provides more precise estimates of the death toll of malaria among children under 5 years of age in sub-Saharan Africa. That new methodology revealed that malaria had claimed many more lives over the last 20-year period than previously recognized. The new analysis indicated, for example, that there had been an estimated 558,000 malaria deaths globally in 2019, nearly 150,000 more than the number indicated in earlier estimates. The estimate for 2020 of 627,000 malaria deaths reflects both the application of the new methodology and the increases seen as a result of disruptions to malaria services during the pandemic.

12. The WHO African region accounted for an estimated 95 per cent of all malaria cases and 96 per cent of all malaria deaths in 2020. Six countries in sub-Saharan Africa accounted for about 55 per cent of all malaria cases globally: Nigeria (26.8 per cent of cases), Democratic Republic of the Congo (12 per cent), Uganda (5.4 per cent), Mozambique (4.2 per cent), Angola (3.4 per cent) and Burkina Faso (3.4 per cent). About 2 per cent of all malaria cases were reported in the WHO South-East Asia region and 2.4 per cent in the WHO Eastern Mediterranean region. The WHO Western Pacific region and the WHO region of the Americas each accounted for fewer than 1 per cent of all cases. The WHO European region has been free of malaria transmission since 2015.

13. Malaria continues to take a heavy toll on pregnant women and on children, particularly in Africa. Left untreated, malaria in pregnancy can lead to maternal death, anaemia and low birthweight, which is a major cause of infant mortality. In 2020, some 11.6 million pregnant women (34 per cent) living in 33 African countries with moderate to high malaria transmission rates were infected with malaria and as a result, an estimated 819,000 children in those countries had a low birthweight.

14. Despite a global levelling off in progress, many countries with a low burden of malaria are moving steadily towards the goal of elimination. Ten countries reached the 2020 elimination milestone under the Global Technical Strategy. In addition, all countries that had been malaria-free in 2015 prevented re-establishment of the disease. Since 2000, 12 countries have been certified malaria-free by WHO including, most recently, El Salvador (February 2021) and China (June 2021).

Vector control

15. Since 2000, expanded access to and use of insecticide-treated mosquito nets have made a major contribution to the reductions seen in the global malaria burden. However, current levels of insecticide-treated net coverage still fall far short of needs: in 2020, less than half (43 per cent) of the people at risk of malaria in sub-Saharan Africa slept under an insecticide-treated net. Since 2017, there has been a slight decline in the overall use of insecticide-treated nets in sub-Saharan Africa.

16. Spraying the inside walls of homes with insecticides (known as indoor residual spraying) is another powerful means of reducing malaria transmission. Globally, indoor residual spraying protection declined from a peak of 5.8 per cent in 2010 to 2.6 per cent in 2020, with decreases seen in all WHO regions. The declines are occurring as countries switch from pyrethroid insecticides to using more expensive alternatives to mitigate mosquito resistance to pyrethroids.

17. While some countries continue to use dichlorodiphenyltrichloroethane (DDT) for indoor residual spraying, no DDT-containing product has been prequalified by WHO and none is under assessment. As such, there has been no comprehensive assessment (based on data of manufacturers) of the efficacy, safety and quality of

DDT for vector control and no inspection of manufacturing sites. DDT has been classified as a persistent organic pollutant and its use is restricted by the Stockholm Convention on Persistent Organic Pollutants.⁴ In line with the Stockholm Convention, WHO supports the global goal of reducing and eventually eliminating the use of DDT while minimizing the burden of vector-borne diseases. In deciding whether to use DDT, a national programme should conduct a detailed assessment that explores the potential use of alternatives. If at the end of such a process, DDT is selected for indoor residual spraying, this choice should be well justified and use of DDT must be in accordance with the conditions set out in the Stockholm Convention. The WHO position statement on DDT published in 2011 is no longer valid; and the current position on the use of this persistent organic chemical is being integrated into the *WHO Guidelines for Malaria* and will be published as a guidelines update by mid-2022.

18. The WHO *Global Vector Control Response 2017–2030* (Geneva, 2017) contains a plan to support countries in mounting coordinated efforts to counter the increasing burden and threat of all vector-borne diseases, including malaria. The strategic approach under the response was strongly supported by member States at the seventieth World Health Assembly held in May 2017. Although regional action plans and strategic frameworks aligned with the response have been implemented across all regions, the focus with regard to implementation of the response remains greater for some of its pillars (for example, enhancing vector control capacity and capability, monitoring and evaluation) than for others (for example, advocacy, resource mobilization, inter- and intrasectoral action and partner coordination). As 2022 is the fifth year of implementation, an interim progress report has been prepared by the WHO secretariat for submission to the seventy-fifth World Health Assembly in May 2022.

Preventive chemotherapies

19. Chemoprevention is known to be a generally safe, effective and cost-effective strategy for malaria control in endemic settings. Since 2012, seasonal malaria chemoprevention has been recommended by WHO for children under 5 years of age in high-burden areas and areas with highly seasonal malaria transmission in the Sahel subregion of Africa. Providing effective antimalarial treatment at monthly intervals during the high-transmission season has a protective effect of approximately 75 per cent against malaria among children under 5 years of age. In 2020, 33.5 million children in 13 African countries received this preventive malaria therapy, compared with 0.2 million in two countries in 2012. Research and experience since 2012 have suggested that the initial WHO recommendation on seasonal malaria chemoprevention was unnecessarily restrictive. For example, children living in areas outside the Sahel with marked seasonal variation in malaria, such as parts of southern Africa, could benefit from seasonal malaria chemoprevention and children above 6 years of age also stand to benefit. In 2020, WHO convened a guideline development group to consider the latest evidence for all forms of malaria chemoprevention. Following this review, the WHO seasonal malaria chemoprevention recommendation is expected to be updated in April 2022 to allow for greater flexibility in the use of this intervention by national malaria programmes.

20. Since 2010, WHO has recommended intermittent preventive treatment in infants with the drug sulfadoxine-pyrimethamine as another chemoprevention approach to protecting young African children in malaria-affected areas from disease and death. Until recently, only one country, Sierra Leone, had implemented the strategy. Research and experience over the last decade have suggested that the initial intermittent

⁴ United Nations, *Treaty Series*, vol. 2256, No. 40214.

preventive treatment recommendation was unnecessarily restrictive. For example, while the recommendation stated that only three doses of sulfadoxine-pyrimethamine should be given and only at specific ages, namely, 2, 3 and 9 months, this specificity did not match the ages at which severe disease and death occur in many settings. Based on a thorough appraisal of all existing evidence on intermittent preventive treatment by a guideline development group convened by WHO in 2020, the recommendation is being updated to allow for greater flexibility in the use of this intervention by national malaria programmes. The WHO intermittent preventive treatment strategy has evolved into what is now called perennial malaria chemoprevention.

21. To protect women in areas of moderate and high malaria transmission in Africa, WHO recommends at least three doses of intermittent preventive treatment in pregnancy with the antimalarial drug sulfadoxine-pyrimethamine. Doses should be given at monthly intervals starting as early as possible in the second trimester during antenatal care visits. In 2020, just under one third (32 per cent) of pregnant women in 33 African countries received the recommended three or more doses, up from 16 per cent in 2015 and 1 per cent in 2010. Barriers to access to the treatment include the long distances that many pregnant women must travel to reach antenatal clinics and related transportation costs. Those who reach health facilities may have difficulty obtaining the preventive medicine owing to stockouts or to insufficiency of information provided by health workers.

RTS,S malaria vaccine

22. The world's first malaria vaccine, known as RTS,S, has now reached more than 1 million African children, in Ghana, Kenya and Malawi, through a WHO coordinated pilot programme. Beginning in 2019, ministries of health in each of the pilot countries led the introduction of the vaccine in selected areas, in collaboration with in country and international partners, including WHO; PATH, an international non-profit organization; the United Nations Children's Fund (UNICEF); and GlaxoSmithKline, the vaccine manufacturer. Financing for the programme is provided by three global health funding bodies: Gavi, the Vaccine Alliance; the Global Fund to Fight AIDS, Tuberculosis and Malaria; and Unitaid. The malaria vaccine reduces child illness and death from malaria and if widely deployed, could save tens of thousands of lives every year.

23. In October 2021, WHO recommended broad implementation of the RTS,S malaria vaccine among children living in sub-Saharan Africa and in other settings with moderate to high *P. falciparum* malaria transmission. The recommendation was informed by the full package of RTS,S evidence, including results from the ongoing pilot programme. Evidence and experience from the pilots have shown that the vaccine is safe, has substantial public health impact and increases equity in access to malaria prevention for vulnerable children.

24. Demand for the RTS,S vaccine is expected to be high and supply in the near to medium term will be limited. Current vaccine production capacity stands at a maximum of 15 million doses per year, while demand is estimated to exceed 80 million doses annually. In response, WHO coordinated the development of a framework for guiding allocation of limited malaria vaccine supply with respect to where the initial limited doses of vaccine will be deployed and where administration of additional doses will be implemented until supply fully meets demands and an allocation framework is no longer needed. WHO and partners continue to work in support of means to increase supply as rapidly as possible.

Diagnostic testing and treatment

25. Diagnosing malaria infection and providing prompt treatment with an effective antimalarial drug are critical to reducing malaria-related disease and death. According to household surveys conducted in sub-Saharan Africa, treatment-seeking rates for children with a fever have changed very little over the past 15 years. Surveys conducted in the period from 2015 to 2019 show that nearly one third (30 per cent) of febrile children under 5 years of age did not receive care, compared with 35 per cent in the period from 2005 to 2011.

26. Among febrile children in sub-Saharan Africa who were taken to a health provider for care, the rate of diagnosis has increased considerably, from a median of 21 per cent in the 2005 to 2011 baseline surveys to 39 per cent in the latest surveys, conducted in the period from 2015 to 2019. Among children with a fever who benefited from malaria treatment, the use of artemisinin-based combination therapies nearly doubled, from 39 per cent in the 2005 to 2011 baseline surveys to 76 per cent in the 2015 to 2019 surveys.

27. In January 2022, WHO published an information note⁵ on the use of rectal artesunate as a pre-referral treatment for severe *P. falciparum* malaria. The information note is based on the findings of a recent study in three African countries and raises significant concerns over the effectiveness of rectal artesunate in real-life settings, which appear to be associated with shortcomings in terms of referral and quality of care. Furthermore, the intervention has been linked to increased prevalence of molecular markers associated with partial artemisinin resistance in at least one country. The WHO information note includes background and guidance for national malaria programmes.

28. The challenges and deficiencies encountered along the cascade of care result in a situation where efficacious interventions become ineffective in real-world settings. Greater attention is needed to ensure equitable access to interventions and improved quality of care through investment in the delivery platforms.

Biological threats to malaria control

29. WHO continues to closely monitor four biological threats to malaria control and elimination: (a) mosquito resistance to insecticides used in vector control tools; (b) parasite resistance to antimalarials; (c) histidine-rich protein 2/3 (HRP2/3) gene deletions in *P. falciparum* parasites; and (d) invasive vector species. All available data can be found on the WHO website through the Malaria Threats Map tool.⁶

Insecticide resistance

30. Global progress in malaria control is threatened by the rapid development and spread of mosquito resistance to the insecticides used in insecticide-treated nets and indoor residual spraying. Of the 88 malaria-endemic countries that provided data for the period from 2010 to 2020, resistance to at least one of the four insecticide classes (pyrethroids, organochlorines, carbamates and organophosphates) in one malaria vector from one collection site was detected in 78 countries. Resistance to all of the main insecticide classes was confirmed in 19 countries.

31. Despite an increasing number of reports of insecticide resistance, evidence of its public health impact is scarce. A large WHO multi-country evaluation conducted between 2011 and 2015 found that insecticide-treated nets continued to provide

⁵ WHO, "The use of rectal artesunate as a pre-referral treatment for severe *P. falciparum* malaria", January 2022. Available at www.who.int/publications/i/item/9789240042513.

⁶ Available at <http://apps.who.int/malaria/maps/threats/>.

significant protection against malaria, even in areas in which mosquitoes had developed resistance to pyrethroids (the most common insecticide class used in such nets).⁷

32. To maintain the impact of existing vector control tools, WHO has underscored the critical need for all malaria-endemic countries to develop and apply effective insecticide resistance management strategies. In parallel, WHO encourages greater investment in the development and evaluation of new and improved vector control tools.

Drug resistance

33. Protecting the efficacy of antimalarial drugs is another critical priority for WHO. A WHO report published in November 2020⁸ found that, overall, first- and second-line artemisinin-based combination therapies have been effective in curing *P. falciparum* malaria over the past decade. In areas where high rates of drug failure were reported, treatment policy changes of the first-line treatment have been made or are ongoing. In general, the immediate threat of antimalarial drug resistance is low and drug failure is unlikely to have played a role in the recent global trends documented in *World Malaria Report 2021*.

34. Within the Greater Mekong subregion, partial resistance to artemisinin has been detected in five countries over the past decade, namely, Cambodia, the Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam. In some of these countries, malaria parasites have also shown resistance to the partner drugs within artemisinin-based combination therapies. In response, ministers of health in the subregion adopted the Strategy for Malaria Elimination in the Greater Mekong Subregion (2015–2030);⁹ priority actions are targeted to areas in which multidrug-resistant parasites have been detected. By accelerating efforts to prevent, diagnose and treat malaria among at-risk communities, the subregion as a whole has achieved a dramatic reduction in its malaria burden, from a peak of approximately 650,000 cases in 2012 to 82,000 cases in 2020. Notably, there has been a steep decline in cases of *P. falciparum* malaria, a primary target in view of the ongoing threat of antimalarial drug resistance.

35. Outside the Greater Mekong subregion, findings from several countries are a cause for concern. In 2010 and 2017, Guyana reported a validated molecular marker associated with partial artemisinin resistance (C580Y). Since 2018, malaria parasites that are partially resistant to artemisinin have also emerged in Rwanda, Uganda and in several countries in the Horn of Africa. However, to date, artemisinin-based combination therapies remain effective and treatment failure rates are below 10 per cent. It is imperative that health-care providers continue to test patients showing signs of a fever and that patients continue to use artemisinin-based combination therapies to treat confirmed malaria.

36. WHO is working with national malaria programmes, research institutions and other partners, within and outside the Greater Mekong subregion, to map the presence of antimalarial drug resistance, monitor drug efficacy and ensure that patients have access to effective treatment. With support from WHO and its partners, all countries in the Greater Mekong subregion have aligned their national malaria plans with the

⁷ The findings of the study are provided in WHO, "Implications of insecticide resistance for malaria vector control", November 2016.

⁸ WHO, *Report on Antimalarial Drug Efficacy, Resistance and Response: 10 Years of Surveillance (2010–2019)* (Geneva, 2020). Available from www.who.int/publications/i/item/9789240012813.

⁹ WHO, *Strategy for Malaria Elimination in the Greater Mekong Subregion (2015–2030)* (Geneva, 2015). Available from www.who.int/publications/i/item/9789290617181.

WHO subregional strategy and are reporting monthly malaria surveillance data to a regional data-sharing platform funded by the Global Fund.

37. WHO is also developing a strategy to respond to antimalarial drug resistance in Africa. An immediate priority is to better map the extent of resistance across the continent. The response plan will identify and address factors that may have hastened the emergence of resistance and could speed its spread, including overuse of drugs, inappropriate use of monotherapies, lack of access to quality treatment and poor adherence to treatment.

Histidine-rich protein 2/3 gene deletions

38. In recent years, HRP2/3 gene deletions have threatened the ability of health providers to diagnose and appropriately treat people infected with *P. falciparum* malaria. An absence of the HRP2 or HRP3 gene enables parasites to evade detection by HRP2/3-based rapid diagnostic tests, causing false negative test results. HRP2/3 gene deletions were first identified in 2010 in the Amazon Basin in Peru and have since been documented outside South America, including in parts of Asia, the Middle East and Africa. The Horn of Africa is disproportionately affected.

39. WHO has developed a global response plan and is working with countries to measure the prevalence of gene deletions and to help them address the implications for case management. Manufacturers are responding to the challenge by developing tests that target alternative antigens; three products were under review for a WHO pre-qualification assessment in 2021. In May 2021, the WHO Malaria Policy Advisory Group called for urgent action to address the increased prevalence of HRP2/3 gene deletions, particularly in the Horn of Africa.¹⁰ WHO recommends an immediate change in testing strategy when local prevalence of the mutated parasites causing false negative test results reaches 5 per cent.

Invasive vector species

40. The *Anopheles stephensi* mosquito was originally native to parts of Asia and the Arabian Peninsula but has been expanding its range since at least 2012, when it was detected in Djibouti. It has continued to spread in the Horn of Africa, with detections reported across Djibouti, Ethiopia, Somalia and the Sudan. As *An. stephensi* adapts easily to urban environments, it may increase the risk of malaria outbreaks in African cities. In areas where *An. stephensi* invasion is suspected or confirmed, WHO recommends the use of vector surveillance to delineate its geographical spread. Countries are encouraged to evaluate existing and new interventions against *An. stephensi* in these settings in order to start building an evidence base for the control of this vector in Africa. WHO plans to launch a regional initiative in Africa to respond to the invasion.

Elimination and certification

41. While progress in the global response to malaria has levelled off, a subset of countries with a low burden of malaria is moving steadily towards elimination. Between 2000 and 2020, the number of countries with fewer than 1,000 indigenous malaria cases increased from 14 to 33, while the number of countries with fewer than

¹⁰ WHO, “Statement by the Malaria Policy Advisory Group on the urgent need to address the high prevalence of pfhrp2/3 gene deletions in the Horn of Africa and beyond”, 28 May 2021. Available at www.who.int/news/item/28-05-2021-statement-by-the-malaria-policy-advisory-group-on-the-urgent-need-to-address-the-high-prevalence-of-pfhrp2-3-gene-deletions-in-the-horn-of-africa-and-beyond.

100 cases increased from 6 to 26. Over the same period, 23 countries reported at least three consecutive years of zero indigenous malaria cases.

42. Countries that achieve at least three consecutive years of zero indigenous cases of malaria are eligible to apply for an official WHO certification of malaria elimination. In February 2021, El Salvador became the first country in Central America to be awarded the certification. Following a 70-year effort, China was certified malaria-free by WHO in June 2021. Eleven additional countries were certified malaria-free between 2000 and 2020: United Arab Emirates (2007), Morocco (2010), Turkmenistan (2010), Armenia (2011), Maldives (2015),¹¹ Kyrgyzstan (2016), Sri Lanka (2016), Uzbekistan (2018), Paraguay (2018), Argentina (2019) and Algeria (2019). Four countries – Azerbaijan, Cabo Verde, Iran (Islamic Republic of) and Tajikistan – recently submitted an official request for malaria-free certification to the Director General of WHO.

43. Ten countries reached the 2020 elimination milestone of the Global Technical Strategy: Algeria, Azerbaijan, Belize, Cabo Verde, China, El Salvador, Iran (Islamic Republic of), Malaysia, Sri Lanka and Tajikistan. To reach that milestone, a country that was malaria-endemic in 2015 had to report, by the end of 2020, that indigenous malaria cases had been reduced to zero for at least one year. The 2020 milestone of the Strategy concerning prevention of the re-establishment of malaria was also achieved; none of the countries that had been malaria-free in 2015 reported having three or more years of indigenous malaria transmission by the end of 2020.

44. In 2017, WHO released a framework for malaria elimination to provide guidance on the activities and strategies required to achieve the elimination of malaria and prevent the re-establishment of transmission in all countries, regardless of where they lie on the spectrum of transmission intensity. A WHO manual¹² published in January 2021 provides extended guidance to countries that are nearing elimination or preparing for WHO certification of malaria elimination.

45. Since 2017, many countries have been supported in reaching their elimination goals through the WHO E-2020 initiative. On World Malaria Day 2021, WHO published a report¹³ charting progress of and lessons learned by the 21 member countries of the initiative. Building on the foundation of E-2020, WHO launched the E-2025 initiative in April 2021 with the aim of supporting 25 countries with the potential to halt malaria transmission by 2025.

Eradication

46. In August 2016, WHO established the Strategic Advisory Group on Malaria Eradication to advise it on the feasibility, potential strategies and cost of eradicating malaria over the next decades, building on the goals and targets set in the Global Technical Strategy and in the context of the Sustainable Development Goals. In 2017, the group developed an initial set of recommendations that clarified current terminology on “elimination” and “eradication” and affirmed the long-standing commitment of WHO to the goal of eradication. The recommendations were captured in a report to the WHO Executive Board at its 141st session.

¹¹ Maldives had been malaria-free by the year 2000 but received an official malaria-free certification from WHO in 2015.

¹² WHO, *Preparing for Certification of Malaria Elimination* (Geneva, 2020). Available from www.who.int/publications/i/item/9789240005624.

¹³ WHO, *Zeroing in on Malaria Elimination: Final Report of the E-2020 Initiative* (Geneva, 2021). Available from www.who.int/publications/i/item/9789240024359.

47. In April 2020, after a three-year study of trends and future projections, members of the Advisory Group released a detailed report¹⁴ on the group's key findings and recommendations. The group identified six areas that would underpin a successful malaria eradication effort: reinforcement of the Global Technical Strategy; research and development of new tools; access to affordable, high-quality, people-centred health care and services; adequate and sustained financing; strengthened surveillance and response; and community engagement. While reaffirming the WHO vision of a world free of malaria, members of the Advisory Group recognized that current progress towards critical global targets is off track and that the goal of eradication is still far from reach.

Surveillance

48. A malaria surveillance system comprises the tools, procedures, people and structures that generate information on malaria cases and deaths. Strong surveillance systems enable national malaria control programmes to identify gaps in programme coverage and respond effectively to disease outbreaks; guide changes in programme planning so that resources are directed to populations most in need; and regularly assess the impact of control measures in reducing disease burden.

49. Strengthening surveillance systems is a key pillar of the Global Technical Strategy, as part of which countries are urged to substantially expand malaria surveillance and transform it into an intervention that is as important as vector control, diagnostic testing and treatment. In addition to helping to accelerate progress towards the 2030 targets, increased investment in malaria surveillance will ease the current reliance on model-based disease estimation methods.

50. While considerable improvements have been made in the past few years, surveillance systems in many countries, in particular those with a high burden of malaria, must be further strengthened. WHO has highlighted a number of actions that are needed, such as the harnessing of digital solutions to improve the efficiency, timeliness and quality of surveillance, which includes moving away from tallying the aggregate number of cases by hand to, where possible, keeping electronic case records. Among the other actions recommended is the use of data to inform communities about the services that are available to them and about their exposure to risks. Governments and partners are encouraged to tailor their malaria responses to local disease settings.

III. Global framework and partnerships

51. The Global Technical Strategy for Malaria 2016–2030 provides a technical framework for all malaria-endemic countries that are working to control and eliminate malaria. It was developed in close consultation with those countries and their partners and the process was overseen by the Malaria Policy Advisory Committee and a dedicated steering committee. The document is built on three pillars: (a) ensure universal access to malaria prevention, diagnosis and treatment; (b) accelerate efforts towards the elimination and attainment of malaria-free status; and (c) transform malaria surveillance into a core intervention. The pillars are complemented by two supporting elements: (a) harnessing innovation and expanding research and (b) strengthening the enabling environment.

¹⁴ WHO, *Malaria Eradication: Benefits, Future Scenarios and Feasibility. A Report of the Strategic Advisory Group on Malaria Eradication* (Geneva, 2020). Available from www.who.int/publications/i/item/9789240003675.

52. The revised Global Technical Strategy, published in 2021, considers the stalling of progress in recent years, as well as the impact of the COVID-19 pandemic. The guiding principles and supporting elements of the strategy have been updated to re-emphasize the need for country ownership of malaria responses; interventions tailored to local data and evidence; sustainable, resilient health systems; equity in access to quality health services; and innovation in tools and approaches. The strategy is fully aligned with the thirteenth General Programme of Work (2019–2023) of WHO and the triple billion targets, as well as with the Sustainable Development Goals and the global universal health coverage agenda.

53. On 31 May 2021, the World Health Assembly adopted resolution WHA74.9 in which the Assembly recommitted to the aim of revitalizing and accelerating efforts to end malaria. In that resolution, the World Health Assembly, led by the United States of America and Zambia, and with the co-sponsorship of many other countries, urged member States to step up the pace of progress against malaria through plans and approaches that are consistent with the updated Global Technical Strategy and the *WHO Guidelines for Malaria*. In the same resolution, the World Health Assembly called on countries to extend investment in and support for health services, ensuring that no one is left behind; sustain and scale up sufficient funding for the global malaria response; and boost investment in the research and development of new tools.

54. The updated strategy relies upon the adoption and adaptation of the *WHO Guidelines for Malaria*, launched by the WHO secretariat in February 2021. The Guidelines bring together for the first time the organization's most up-to-date recommendations on malaria in one user-friendly online platform. In 2021, WHO guideline development groups focused on vector control, the malaria vaccine, chemoprevention, treatment and elimination convened to develop new or updated recommendations. WHO recommendations on malaria will continue to be updated, where appropriate, based on the latest available evidence through a transparent and rigorous guidelines review process. The consolidation of WHO malaria guidelines is one of a number of actions that the organization has taken in recent years to make its guidance more accessible to end users in malaria-endemic countries.

55. The revised strategy highlights the subnational tailoring of malaria control interventions through the process of stratification as a key approach to optimizing malaria responses within a country or territory. Stratification is an approach through which a country or area is divided into smaller units in which various combinations of interventions may need to be delivered.¹⁵ On the basis of these analyses, evidence-informed national malaria strategic plans that are owned and led by countries should be developed.

56. Malaria is a disease of poverty and marginalization, taking a heavy toll on populations that are chronically disadvantaged. While existing inequities have been widely acknowledged as barriers to achieving global and national goals and targets, the magnitude and extent of health inequalities have been poorly documented and understood. In December 2021, WHO published a first report¹⁶ devoted to systematically assessing the global state of inequality for three diseases: malaria, HIV and tuberculosis. Using the latest available global data for 32 health indicators (addressing the burden of disease; knowledge, attitudes and practices; detection; prevention; testing and treatment; and social protection), the report quantifies within-country inequalities by sex, economic status, education, place of residence and age.

¹⁵ WHO, *WHO Technical Brief for Countries Preparing Malaria Funding Requests for the Global Fund (2020–2022)* (Geneva, 2020). Available from www.who.int/publications/i/item/9789240004139.

¹⁶ WHO, *State of Inequality: HIV, Tuberculosis and Malaria* (Geneva, 2021). Available from www.who.int/publications/i/item/9789240039445.

The report is timely owing to the renewed emphasis on equity in prominent global initiatives and plans, including the 2030 Agenda for Sustainable Development¹⁷ and WHO global strategies to end AIDS, tuberculosis and malaria.

“High burden to high impact” initiative

57. The “High burden to high impact” (HBHI) initiative was launched in 2018 by WHO and the RBM Partnership to End Malaria as a mechanism for accelerating progress in the countries that carry the highest burden of malaria. The initiative is founded on four pillars: political will to reduce malaria deaths; strategic information to drive impact; better guidance, policies and strategies; and a coordinated national malaria response. It is being led by 11 countries (10 in Africa, plus India) which in 2017 accounted for approximately 70 per cent of the world’s malaria burden.

58. Since 2018, all 11 countries have implemented “High burden to high impact”-related activities across the four response elements. During the COVID-19 pandemic, HBHI countries mounted strenuous efforts to maintain malaria services. In 2020, seasonal malaria chemoprevention campaigns were delivered on time and planned distributions of insecticide-treated nets were realized in most countries, despite delays. However, moderate disruptions in access to malaria diagnosis and treatment during the pandemic contributed to increases in cases and deaths; between 2019 and 2020, all HBHI countries, except India, reported increases in cases and deaths (and in India, the rate of reduction declined compared with that of pre-pandemic years). Overall, the total number of malaria cases in HBHI countries increased from 150 million in 2015 to 163 million in 2020. The total number of malaria deaths in those same countries increased from 390,000 in 2015 to more than 444,000 in 2020.

59. With support from WHO and its partners, participating HBHI countries have been collecting and analysing malaria data to better understand the geographical distribution of the disease and the potential impact of applying prioritized mixes of malaria control interventions. The analyses will enable countries to use available funds in a more effective, efficient and equitable way.

60. Jointly with the RBM Partnership to End Malaria, an evaluation of the HBHI approach will be carried out in 2022 to review progress, document best practices and lessons learned and identify solutions to key challenges. The recommendations arising from the evaluation will be used to improve the approach and for advocacy focusing on other high-burden countries within and outside Africa.

Malaria and the pandemic

61. In March 2020, WHO initiated a cross-partner effort to mitigate the negative impact of the COVID-19 pandemic in malaria-affected countries and, where possible, contribute to a successful COVID-19 response. The work was carried out in close collaboration with malaria experts and leaders from nearly 20 partner organizations.

62. In the early days of the pandemic, WHO issued an urgent call to malaria-endemic countries to ensure the continuity of essential malaria control services and at the same time to protect health workers and communities against COVID-19 transmission. In an analysis by WHO and partners,¹⁸ published in April 2020 to reinforce this urgent call, it was found that in the worst-case scenario, the number of malaria deaths in sub-Saharan Africa could double in 2020 compared with 2018.

¹⁷ General Assembly resolution 70/1.

¹⁸ WHO, *The Potential Impact of Health Service Disruptions on the Burden of Malaria: A Modelling Analysis for Countries in Sub-Saharan Africa* (Geneva, 2020). Available from www.who.int/publications/i/item/9789240004641.

63. Heeding the call, many malaria-endemic countries mounted impressive responses during the pandemic, adapting their delivery of malaria services to the restrictions imposed by Governments as a result of the pandemic. Guidance developed by WHO and its partners, entitled “Tailoring malaria interventions in the COVID-19 response”,¹⁹ has been critical in helping countries to adapt their responses to ensure the safe delivery of services for the prevention, detection and treatment of malaria. The document is consistent with broader WHO guidance on maintaining essential services in COVID-19 settings.

64. According to the latest *World Malaria Report*, countries succeeded in averting the worst-case scenario of malaria deaths projected by WHO by shoring up their malaria programmes. Globally in 2020, nearly three quarters (72 per cent) of insecticide-treated nets were distributed as planned in malaria-endemic countries. Thirteen countries in Africa’s Sahel subregion reached 11.8 million more children with preventive antimalarial medicines during the high-transmission rainy season in 2020 compared with 2019. However, moderate disruptions in the delivery of malaria services during the COVID-19 pandemic contributed to the marked increases seen in malaria cases (14 million) and deaths (69,000) between 2019 and 2020; most of these increases were reported in the WHO African region.

Global partnership and political commitment

65. The RBM Partnership Strategic Plan 2021–2025,²⁰ published in 2020, outlines the Partnership’s three core strategic objectives: (a) optimizing the quality and effectiveness of country and regional programming; (b) maximizing levels of financing to meet resource and coverage demands; and (c) facilitating the deployment and scale-up of new products, techniques or implementation strategies. The Plan identifies four “strategic enablers” for the Partnership to follow to reach these goals: data sharing and use; effective partnerships; targeted advocacy and communications; and a focused secretariat. The Global Fund to Fight AIDS, Tuberculosis and Malaria and the U.S. President’s Malaria Initiative have also developed bold strategies to reduce malaria cases and deaths and reduce health inequities. The strategies reflect the importance of integrated people-centred services, suited to local contexts and community needs. They also share a commitment to addressing emerging challenges, such as biological threats.

66. The Special Programme for Research and Training in Tropical Diseases and Unitaid, hosted by WHO, are other important partners in global efforts to combat malaria. WHO collaborates with the Special Programme on implementation of research projects and with Unitaid on scaling up access to innovative health products.

67. Countries in the Asia-Pacific region launched the Asia Pacific Leaders Malaria Alliance in October 2013, whose mission is to support and facilitate the elimination of malaria throughout the region by 2030 or earlier if possible. WHO supports the secretariat of the Alliance in Singapore through the provision of technical guidance. The Alliance’s Leaders Dashboard enables countries to track progress in malaria elimination and achievements across all sectors; it was developed in close collaboration with WHO, drawing on indicators from the *World Malaria Report*.

¹⁹ Geneva, 2020. Available from www.who.int/publications/m/item/tailoring-malaria-interventions-in-the-covid-19-response.

²⁰ More information is available at <https://endmalaria.org/about-us/strategy>.

IV. Funding needs

68. Global malaria funding levels have plateaued in recent years and remain insufficient to achieve global targets. In 2020, total funding for malaria control and elimination reached an estimated US\$ 3.3 billion against a target of US\$ 6.8 billion. To reach the 2030 targets of the Global Technical Strategy, current funding levels will need to more than triple to US\$ 10.3 billion per year.

69. Sources of funding for malaria control and elimination have remained relatively constant over the past 10 years. In both 2020 and the period 2010–2020, domestic funding by malaria-endemic countries accounted for nearly one third of all funding, while international sources accounted for a little more than two thirds. The United States of America contributed the highest share of international funding (39 per cent) in 2020, followed by the United Kingdom of Great Britain and Northern Ireland (9 per cent), France (4 per cent), Germany (3 per cent) and Japan (3 per cent). In 2020, about US\$ 1.4 billion, representing about 42 per cent of total malaria investments that year, was channelled through the Global Fund.

70. Robust financing will be essential to meeting the targets of the Global Technical Strategy for 2025 and beyond. The historic \$14 billion replenishment of the Global Fund in October 2019 and increased malaria funding by the U.S. President's Malaria Initiative have been important and positive milestones in the past few years. However, with a US\$ 3.5 billion funding gap in 2020, additional commitments are needed. In 2022, the Global Fund entered its seventh replenishment cycle covering the period 2023–2025. WHO has joined other partners in calling for a fully funded Global Fund to complement other sources of sustainable financing that are needed for improving equitable access to quality services and interventions. New challenges, such as the emergence of biological threats, may require more expensive approaches and additional investment in new tools.

V. Recommendations

71. The findings set out in the *World Malaria Report* in recent years signal a clear need for an urgent response and greater investment in malaria control, particularly in countries in the WHO African region that have a high malaria burden. Countries and their development partners should prioritize support for the most vulnerable – pregnant women and children in Africa – and for the poorest and most marginalized populations which are less able to access services and are hardest hit when they become ill. Adequate and predictable financing is essential to sustaining progress in efforts to combat malaria.

72. Political commitment to universal health coverage must be translated into domestic resources and actions in malaria-endemic countries to ensure that all those in need have access to the appropriate mix of interventions for malaria without facing financial hardship. Primary health care is the cornerstone of meeting the health needs of individuals and engaging communities in response efforts.

73. There is an urgent need to make more effective use of the tools currently available for the prevention, diagnosis and treatment of malaria, particularly in high-burden settings. Gaps in the coverage of proved interventions must be identified and filled. The “High burden to high impact” initiative is supporting countries in scaling up the appropriate mixes of interventions using accessible and affordable front-line services in primary health-care settings.

74. Urgent action is needed to tackle the biological threats that could diminish the effectiveness of current prevention, diagnostic and treatment tools. This should be

complemented by appropriate investments in tools for the future that can withstand those threats. The contributions of the scientific community and the private sector remain essential: new products, such as new insecticides and more durable insecticide-treated bednets, improved diagnostic tools and vaccines, and more effective medicines are fundamental to ensuring sustained progress in efforts to combat the disease.

75. There is also a critical need to strengthen malaria surveillance and data quality in all malaria-endemic regions. Reliable health information is essential for developing sound strategic plans, ensuring that resources are targeted efficiently and equitably and measuring the impact of interventions.

76. Member States are urged to accelerate the pace of progress against malaria by implementing national strategies and plans that are consistent with the updated Global Technical Strategy and the *WHO Guidelines for Malaria*. Interventions should be informed by local data and tailored to the local context.

77. In order to achieve better impact and ensure that successes are sustained, countries are encouraged to increasingly adopt a holistic approach, anchored in the Sustainable Development Goals. A multisectoral approach to malaria control that builds on synergies with other development priorities will be needed in order to optimize malaria interventions, tackle inequities and address the broader determinants of disease.

78. Progress in combating malaria can be maintained only through a concerted and focused multi-stakeholder effort, built on the foundations of political commitment, continuous scientific advancement and vigorous innovation.
