WHO Malaria Policy Advisory Group

Meeting report, 8–10 April 2025

World Health Organization

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Contents

Abbreviations

ACT	artemisinin-based combination therapy
G6PD	glucose-6-phosphate dehydrogenase
IRS	indoor residual spraying
ITN	insecticide-treated net
MFT	multiple first-line therapies
MPAG	Malaria Policy Advisory Group
pfhrp2	*Plasmodium falciparum* histidine-rich protein 2
SNT	subnational tailoring
TES	therapeutic efficacy study
WHO	World Health Organization

1. Background

The World Health Organization (WHO) convened the Malaria Policy Advisory Group (MPAG) for its 27th meeting, held virtually and in person in Geneva, Switzerland, on 8–10 April 2025. MPAG convenes twice annually to provide independent strategic advice to WHO on technical issues related to malaria control and elimination. MPAG advises the WHO Director-General and the Global Malaria Programme specifically on:

- appropriate malaria policies and standards based on data from malaria programme implementation by Member States and malaria control partners, as well as reviews of the best available evidence;
- engagement of WHO in malaria-related initiatives;
- major issues and challenges to achieving global malaria goals; and
- identification of priority activities to address challenges.

The two days of open sessions involved participation of 16 MPAG members and 272 observers who joined remotely via a virtual conferencing platform, with the MPAG Chair and WHO staff participating in person. Among the observers were official nominations from seven countries (Brazil, Burkina Faso, Guyana, Malaysia, Sudan, Thailand and Uganda). The meeting was chaired by Professor Dyann Wirth.

The following updates and progress were presented in the following work areas:

- Update from the Global Malaria Programme
- Responding to changes in global malaria resourcing and architecture
- Subnational tailoring (SNT) of malaria interventions and strategies
- Gender equality, human rights and health equity in malaria response
- Malaria elimination
- Operational guidance on vector control
- Drug resistance

All 16 MPAG members participating in the meeting updated their Declaration of Interest forms in advance of the meeting, which were assessed by the WHO Secretariat; 13 members reported interests. The full report on members' Declarations of Interest was published two weeks before the meeting and is available on the meeting website. No MPAG members reported conflicts of interest specifically related to the agenda topics. It was assessed that all members could fully participate in all sessions (see Annex 1). The agenda is reproduced in Annex 2, and the participants are listed in Annex 3.

2. Overview of the sessions

2.1 Update from the Global Malaria Programme

WHO background

The Director of the Global Malaria Programme highlighted updates and key achievements in the Programme's work across five areas since the October 2024 MPAG meeting:

- ***World malaria report 2024*** *(1)*. The Director shared a high-level summary of the latest report, released in December 2024. Despite some encouraging trends (177 million cases and 1 million deaths averted in 2023), malaria remains a formidable public health challenge (263 million new cases and 597 000 deaths in 2023). The African Region continues to bear the brunt of the disease (94% of global cases, 95% of deaths). The report warns that progress towards achieving the critical targets of the WHO *Global technical strategy for malaria 2016–2030 (2)* is off track and calls for urgent and intensified action in high-burden countries, particularly through the implementation of the commitments captured in the Yaoundé Declaration *(3)*. It also urges global partners to align their support more closely with country-led national malaria plans. The 2024 report included for the first time a special chapter focused on gender equality, human rights and health equity.

- **Reduction of funding for malaria.** The Director noted that the reduction in funding from the United States Government and cuts in official development assistance from other countries have led to significant disruptions in the delivery of essential malaria interventions and services and could have serious consequences for the global malaria response. The United States Government has been a major funder of malaria programmes worldwide, contributing an average of 37% of total financing between 2010 and 2023 through bilateral and multilateral channels. A modelling analysis by the Malaria Atlas Project found that, without continued support from the U.S. President's Malaria Initiative, disruptions could result in an increase of 14.9 million cases and 107 000 deaths in 27 African countries by the end of 2025 *(4)*.

- **"Big Push".** The Director highlighted the Programme's contribution to the development of the "Big Push", a multi-stakeholder effort aimed at reinvigorating global malaria control. The "Big Push" seeks to: align support from global malaria partners with the specific needs of endemic countries; improve the efficiency and equity of malaria responses; strengthen primary health care; and introduce new, affordable malaria control tools for the future. WHO's ongoing work helps to advance two "Big Push" priority pillars: data-driven decision-making and the rapid introduction of new tools.

- **Technical updates.** The Director highlighted updates across all technical areas of the Programme's work: vector control and insecticide resistance; vaccines, diagnostics, medicines and resistance; the "High burden to high impact" approach; elimination; and strategic information for response. Highlights since the last MPAG meeting included the introduction of malaria vaccines in 19 African countries (as of 8 April 2025); updated guidelines on glucose-6-phosphate dehydrogenase (G6PD) testing to guide tafenoquine and primaquine treatment *(5)*; an updated response plan to address *Plasmodium falciparum* histidine-rich protein 2 (*pfhrp2*) gene deletions *(6)*; a new implementation guide on multiple first-line therapies (MFT) to address the rising threat of antimalarial drug resistance in Africa *(7)*; the malaria-free certification of two additional countries (Egypt in October 2024 *(8)* and Georgia in January 2025 *(9)*); and a new field manual on malaria control in humanitarian emergencies, to be published in Q3 2025. Other technical updates are covered in subsequent sections of this meeting report.

- **Upcoming.** The Director highlighted updates across other key areas of the Programme's work:
  - **Annual report.** The Programme's first-ever annual report is designed to strengthen both the visibility and accountability of its work *(10)*. The report describes progress in implementing the Programme's operational strategy across four core pillars: technical leadership; norms and standards; new tools and innovation; and strategic information for impact.
  - **World Malaria Day.** This year's World Malaria Day campaign is being held under the theme "Malaria ends with us: reinvest, reimagine, reignite" *(11)*. The Global Malaria Programme joins the RBM Partnership to End Malaria in calling for shared responsibility amid a challenging global health landscape.
  - **New guidance in the pipeline.** Key guidance expected in Q2-4 2025 includes: an operational manual on larval source management; an updated malaria vaccine introduction guide; a revised manual on malaria surveillance, monitoring and evaluation; a reference manual on tailoring malaria interventions and strategies at the subnational level; an updated framework for malaria elimination; and global guidance on prevention of re-establishment of malaria transmission. The latest publication schedule is available on the Programme's website *(12)*.
  - **Malaria and climate change.** Following the publication of a thematic chapter on the malaria–climate nexus in the *World malaria report 2023 (13)* and a subsequent scoping review by WHO and partners on climate change, malaria and neglected tropical diseases, published in May 2024 *(14)*, the Global Malaria Programme has been working with the WHO Global Neglected Tropical Diseases Programme to develop vulnerability and adaptation guidance on malaria, vector-borne diseases and climate change.
  - **Evidence reviews for living guidelines.** Following a workshop in January 2025, the WHO Science Division, the Global Malaria Programme and the Future Evidence Foundation are planning to pilot a new initiative to enable more frequent systematic reviews of available evidence to update existing recommendations or generate new recommendations, so that policy-makers have access to the most relevant, up-to-date WHO recommendations to inform national policies. The plan for these reviews is to initially focus on WHO guidance related to insecticide-treated nets (ITNs), intermittent screening and treatment of malaria in pregnancy and the use of certain antimalarial medicines (tafenoquine and primaquine).

MPAG conclusions

MPAG commended the Director of the Global Malaria Programme on the progress made in several areas since the last MPAG meeting. MPAG commended the malaria-free certification of two additional countries; however, the Group expressed ongoing concern regarding the limited progress in reducing the malaria burden in high-burden countries. MPAG noted the progress in implementing the Yaoundé Declaration in several "High burden to high impact" countries. The reduction in funding from the United States Government and cuts in official development assistance from other countries represent a major threat to sustained progress, particularly with respect to child and maternal deaths. There is an urgent need to mitigate the shortfalls in commodities and services. MPAG commended the Global Malaria Programme and WHO Regional Office for Africa for their proactive efforts to assist countries.

MPAG acknowledged the importance of including gender and equity as key pillars in the malaria strategy and commended the Global Malaria Programme for including a chapter on this topic in the *World malaria report 2024 (1)*. MPAG commended the Global Malaria Programme on the nearly completed manual on SNT and noted the revisions in response to stakeholder input. SNT will be particularly important in the current resource-constrained environment. MPAG recognized progress since the last meeting, including continued introduction of malaria vaccines; updated guidelines on testing for G6PD deficiency; the updated response plan to *pfhrp2* gene deletions; the new implementation guide on MFT to address the rising threat of antimalarial drug resistance; and upcoming guidelines on spatial repellents.

MPAG noted the completion of the "Big Push" agenda and supported Global Malaria Programme leadership in the two key areas: data-driven decision-making and the introduction of new tools. MPAG emphasized that the current environment presents not only new challenges but also new opportunities. Data-driven decision-making exemplified by the SNT approach is critical to the smart deployment of resources suited to each setting. A business-as-usual, one-size-fits-all approach is no longer viable, and countries may choose to prioritize interventions based on risk.

MPAG commended the Global Malaria Programme Director and staff for their dedicated work, particularly in these challenging times.

2.2 Responding to changes in global malaria resourcing and architecture

WHO background

The recent reduction in funding from the United States Government and cuts in official development assistance from other countries have broad and far-reaching consequences for international cooperation and specifically for the malaria response. Although there are many uncertainties, both short-term and longer term setbacks are expected. Without urgent action, there will be a sharp rise in malaria cases and deaths.

WHO presented a situation analysis of the disruptions, highlighting the critical gaps in health financing, services and interventions, including those for malaria. The presentation highlighted some of the positive responses from countries, including increased domestic funding, reprioritization of available resources, and national coordination. In Nigeria, lawmakers approved an additional US$ 200 million for the health sector as part of a 2025 spending plan in an effort to mitigate the impact of the recent suspension of foreign aid from the United States of America. Similar actions have been taken in Ethiopia and Rwanda, and other countries are in discussions with their Ministries of Finance to mobilize domestic resources to cover critical gaps.

WHO provided some immediate and long-term actions for MPAG to consider as guidance to countries and partners as they seek to navigate these challenges.

MPAG conclusions

MPAG congratulated the Global Malaria Programme and RBM Partnership for being proactive in tackling an extremely important issue head-on and in a timely manner.

Key points raised during the discussion for additional consideration by WHO included the following:

- *Increasing reliance on domestic resources for sustainability*

  Even before the reduction in funding from the United States Government and cuts in official development assistance from other countries, malaria financing was inadequate and relied heavily on the United States Government, which provided more than one third of all funding. There is an urgent need to diversify funding sources at the country level and to reduce reliance on any single donor. This includes mobilizing additional partners, engaging the private sector and increasing domestic budget allocations.

  Recognizing this, in 2024, the Ministers of Health from the highest burden countries signed the Yaoundé Declaration *(3)*, committing to more sustainable financing approaches, including by increasing domestic resource mobilization and calling for more predictable contributions from donors. This shift is critical – not only for sustaining progress, but also for supporting the introduction of new tools for the fight against malaria.

  MPAG endorsed the proposed strategies presented by WHO as the basis for shaping the future of health financing in malaria-endemic countries. MPAG noted that countries could turn the current challenging situation into an opportunity to be increasingly more self-reliant and assume responsibility for funding some or all malaria interventions themselves. In addition, the withdrawal of technical capacity originally supported through the same funding stream has also highlighted the importance of building capacity within countries and in the region, with more limited reliance on external technical capacity.

- *Need to identify additional sources of funding*

  MPAG noted that countries were showing some resilience in their response. However, the acute funding crisis across a number of sectors will be challenging for governments, as it will be hard to bridge all the exposed gaps. It will require them to reach out to a broad range of potential funders, including the private sector, international development banks and new donors, to help fill the short-term needs, particularly for lifesaving commodities and their delivery. Partnerships with civil society groups and parliamentarians will be valuable for making the case for additional domestic and international funding. MPAG also recognized the benefits of the "Big Push" and the need for existing donors to demonstrate flexibility by aligning with evolving national plans and priorities. MPAG advised WHO to track the status of grants and consider means of encouraging the United States Government to reinvest in malaria.

- *Maintain visibility on stocks of malaria commodities at all levels beyond dealing with the current funding challenges*

  MPAG recommended that the current gap-mapping exercise go beyond this short-term phase because the impacts of the United States Government cuts and stop work orders are likely to deepen in the next few years. In this context, routine visibility on antimalarial commodity levels to guide stock management is even more important and can draw on innovative use of technology, such as the use of mobile phones to track the availability of antimalarial medicines. Timely information on interventions and commodities should be incorporated into national malaria data repositories and disease programming. MPAG members further noted that there was a need to standardize information on interventions and commodities, so that countries could incorporate them into their day-to-day programming.

2.3 Status update on SNT of malaria interventions and strategies manual

WHO background

This session provided an update on the reference manual entitled "Tailoring of malaria interventions, strategies, and actions sub nationally". Global funding for malaria has plateaued over the past decade and most malaria-endemic countries are working under significant resource constraints. As a result, countries must use their limited resources even more effectively and equitably throughout their malaria programme planning and implementation cycle – from programme reviews to the formulation and execution of national strategic plans. At the core of this process is the use of data and data analysis to assess programme progress and ensure that decisions are evidence-based. SNT of malaria interventions is an approach that integrates this evidence-based framework within the malaria planning and implementation cycle. It is defined as the use of local data and contextual information to determine the appropriate mix of interventions and strategies for a given area, ensuring maximum impact on disease transmission and burden. SNT aims to answer key questions, such as where to intervene, which interventions or strategies to employ, which interventions can be afforded and how they should be prioritized, how and when they should be implemented, and how to design systems to monitor their impact.

This reference manual outlines the use of subnational data and analytical approaches to inform malaria planning and implementation processes and deliverables, such as malaria programme reviews, national strategic plans and operational plans. The manual is intended for national malaria programmes, their implementation partners, subnational government entities, technical experts and funders. It is designed to evolve over time as new recommendations, strategies and methodologies emerge.

Since the last MPAG meeting in October 2024, the manual has been shared internally (within the Global Malaria Programme) and externally through various rounds of reviews, including within MPAG and other WHO technical units (Monitoring, forecasting and inequities, Health planning, Health financing, Health services performance assessment, Clinical services and systems, Vaccines, and Maternal, newborn, child and adolescent health), WHO regional offices, donors, implementing partners (Clinton Health Access Initiative, Applied Health Analytics for Delivery and Innovation, Population Services International, PATH, Malaria Consortium, RBM Partnership), and academic and research groups (Swiss Tropical and Public Health Institute, Northwestern University, Institute for Disease Modelling, Malaria Atlas Project, Kenya Medical Research Institute, Ifakara Health Institute). Table 1 shows the consolidated feedback and how it has been addressed.

Moving forward, the Global Malaria Programme will address any remaining key comments from the second round of review by April 2025, including further improving the structure to focus on the implementation of SNT; describing how SNT informs strategic plans (i.e. costed intervention mixes based on WHO recommendations and expected impact with some level of prioritization) and investment plans (i.e. under different budget scenarios and available resources, optimizing intervention mixes through different approaches); showing the integration of the SNT process within the malaria planning cycle; adding more details on methods for determining cost-effectiveness; and adding a section on SNT in elimination settings. The revised manual will be shared with national malaria programmes and MPAG SNT reviewers for the third and final round of comments by April 2025. The content of the manual is scheduled to be finalized by May 2025.

Table 1. Summary of feedback on the SNT manual

	Feedback	How it has been addressed
1	**Improve navigation of the manual for different users, including condensing and/or moving some sections to annexes**	• Added a "How to use the reference manual" section • Developed a step-by-step SNT implementation framework • Added a glossary aligned with the 2021 *WHO malaria terminology (15)* • Streamlined the text (e.g. introduction chapter) and formulated summary tables (e.g. summarizing the SNT process) • Added WHO/external references for further reading (e.g. WHO malaria elimination framework *(16)* and surveillance, monitoring and evaluation manual *(17)*) • Improved the readability of charts
2	**Improve integration of the SNT process with the national malaria strategic planning cycle**	• Included references throughout the manual that SNT should be conducted alongside the national malaria strategic planning process with estimated timelines
3	**Include examples of how countries have successfully applied prioritization**	• Included a theoretical country example as a defined section • Referred to a specific country: *Subnational tailoring of malaria interventions to prioritize the malaria response in Guinea (18)*
4	**Provide more information on how to prioritize interventions**	• Added a table to summarize key points for prioritization of interventions • Added more references, e.g. summarized details on intermittent preventive treatment, how resistance data inform targeting of indoor residual spraying (IRS) and ITN deployment
5	**Clarify the processes and methods behind key terms** (e.g. optimization and prioritization), including guidance on how to conduct cost-effectiveness analyses	• Developed a glossary with all key terms defined • Elaborated on specific terms, e.g. eligible interventions, strategic scenarios with prioritized interventions, and optimization within the main text • Reformulated the chapter on cost-effectiveness
6	**Provide practical guidance:** – Epidemiological indicators needed for stratification – Handling of data gaps, including improving data quality aspects, age-disaggregated data and standardization – Use of modelling in the SNT process (including uncertainty)	• Added a key metrics table and recommendations for surveillance improvements • Expanded the data assembly and management section to include recommendations on data quality and minimum age disaggregation levels • Added considerations for how to address uncertainties (e.g. multi-model comparison and its limitations)
7	**Document lessons learned, including comprehensive checklists for best practices**	• Developed a monitoring and evaluation checklist as an annex • Included SNT team terms of reference as an annex
8	**Specify local leadership and clarify analytical capacity required**	• Added a capacity-building section to detail how malaria programmes can broaden access to data management and analytical expertise

MPAG conclusions

Overall, MPAG congratulated the Global Malaria Programme for the extensive revisions made to the SNT manual. Finalization of the manual represents a priority in the current reduced resource landscape, as it will help countries to identify the best possible impact with the resources available, ensuring country ownership with coordinated stakeholder participation in the decision-making process.

Significant improvements have been made to the previous version, such as, first, the incorporation of checklists to guide monitoring and evaluation processes around SNT and optimization of interventions and data needs. These checklists have been well received and will enable programmes to track the extent to which SNT processes have been followed and identify areas of improvement for future SNT rounds. Second, the language and definitions across SNT steps have been improved, ensuring a clearer distinction between prioritization and optimization and how these can be implemented, using practical country examples. Third, a section dedicated to fostering local talent has been included. Fourth, information has been incorporated on uncertainty around modelling approaches and key considerations for understanding intrinsic model uncertainties and SNT data gaps. Finally, the SNT process has been integrated with the national malaria strategic planning cycle with estimated timelines.

MPAG made the following comments for consideration during the final stage of revising the SNT manual:

- **Ensure quality feedback is collected from national malaria programmes:** Considering that national malaria programmes are the key audience for this manual, MPAG suggested incorporating a more efficient process for engaging them in the next round of review. This process should ideally encourage national malaria programmes' input into the manual and feedback on content and optimal navigation of the document, and gather further country perspectives on SNT use and implementation. To facilitate future revisions of the manual, regular feedback from national malaria programmes on challenges encountered, approaches used to overcome challenges and good practices should be encouraged.
- **Navigation and simplification of the document:** The current version remains technically complex and MPAG members welcomed the ongoing restructuring of the SNT manual, focusing on Part 3 "Implementation of SNT" and incorporating other chapters into annexes. It is critical that the document be easily understood despite its complexity. Developing associated training materials would be beneficial.
- **Complementarity with other WHO guidance documents**: Other initiatives are currently under way to facilitate identification of optimal intervention mixes in resource-constrained environments, such as the "Global guidance for prioritization" document. It is not entirely clear how these two documents complement each other and are embedded in the SNT process. MPAG recommends that the next version include clear cross-references to any complementary documents (already published or upcoming publications if relevant) and highlight any potential links to avoid confusion on prioritization of interventions.
- **SNT costing components**: Incorporation and finalization of SNT costing elements and considerations for cost-effectiveness analysis would be welcome. Given that some efficiencies mentioned for malaria interventions are linked to digitalization of intervention processes, it would be useful to outline the expected associated costs that countries might need to consider and how these might be deemed appropriate, even in resource-constrained environments. Country examples on these aspects would be extremely helpful to programmes in demonstrating

how they can achieve efficiencies in intervention delivery through integrated enhanced surveillance systems. Limitations around cost estimation should be mentioned (e.g. cost estimates vary significantly between countries and within countries from one region to another).

- **Equity**: Given the important points raised in session 4, it would be beneficial to incorporate into the SNT manual how equity aspects are applied in practice (e.g. how data disaggregated by gender and age and barrier assessments are used in practice for stratification and intervention tailoring) and perhaps add some cross-references to relevant documents.

2.4 Gender equality, human rights and health equity in malaria response

WHO background

The *World malaria report 2024 (1)* features for the first time a dedicated chapter on addressing inequities in the global malaria response, highlighting persistent structural challenges. Barriers such as poverty, weak surveillance systems, under-resourced health services and harmful gender norms continue to limit access to care and prevention interventions, including for malaria. Climate change, displacement and conflict further exacerbate these vulnerabilities. A lack of disaggregated data – e.g. by sex, age, disability and geography – and limited qualitative evidence hinder the ability to identify who is most at risk and why, and how to effectively reach them. These issues underscore the urgent need for a more inclusive and effective malaria response that prioritizes those most at risk and underserved.

The populations most impacted include women and adolescent girls, men and boys in high-risk occupations, Indigenous Peoples, persons with disabilities, migrants and refugees. These groups face a double burden: higher biological and environmental risk, coupled with social and systemic exclusion. For example, children under 5 in low-income households and those with mothers who lack formal education experience a significantly higher malaria burden. Indigenous women often miss out on antenatal care and preventive treatment, while mobile male labourers in sectors such as mining are frequently excluded from routine services. Without efforts to address these disparities, malaria responses risk reinforcing existing inequities. Addressing these disparities requires a clear understanding of the social and structural determinants that drive vulnerability.

To close these gaps, there is a need to integrate gender equality, health equity and human rights principles into malaria programming. This includes investing to strengthen data systems, conducting targeted research to identify and understand how and why specific groups are left behind, and actively engaging affected communities in programme design. Governments have a key role to play in embedding equity in national strategies – through policy leadership, inclusive service delivery and accountability mechanisms. This commitment has been demonstrated by Ministers of Health from high-burden malaria countries in Africa through the signing of the Yaoundé Declaration *(3)*, which calls for a multisectoral approach to the fight against malaria. The Declaration emphasizes the need to ensure that all at-risk populations, including those in hard-to-reach areas and humanitarian settings, have consistent access to appropriate prevention and treatment tools.

Aligning malaria responses with global commitments – particularly Sustainable Development Goal 10 on reducing inequalities – is essential to ensure that efforts are effective, equitable and sustainable, and that no one is left behind.

MPAG conclusions

MPAG members acknowledged and welcomed the thoughtful approach taken on this issue. They appreciated the presentation and noted the excellent analysis and examples used to illustrate the vulnerability of different sectors of society. It was noted that the lack of disaggregated data limits the ability to identify and reach underserved populations; without such data, these groups will continue to be missed.

MPAG members had the following suggestions:

- While some strategies have been outlined, more practical examples should be included in current documents under development. Subject to the availability of resources and capacity, the Global Malaria Programme should also develop additional guidance to support this work.
- While the draft SNT manual includes references to equitable strategies, there is an opportunity to strengthen this further. Specifically, greater clarity could be provided on the required levels of data disaggregation and additional information beyond data related to barrier assessments and microplanning. This information will help countries to identify the most vulnerable and those most in need of services in order to reach the unreached. These practical examples can illustrate how vulnerability and equity considerations can be integrated into data-driven decision-making and scenario-planning processes. Practical examples could be given in the SNT manual. Additional guidance could also be provided on the need for targeted training to build awareness and promote planning that is sensitive to gender, equity and human rights.
- Populations that are vulnerable to climate change and extreme weather events require targeted support for malaria. The Global Malaria Programme can work with countries to identify and highlight these vulnerabilities and provide country-level guidance on climate vulnerability and adaptation for malaria and vector-borne diseases.

MPAG members highlighted the following additional areas of the *World malaria report 2024 (1)* chapter:

- Now is a crucial time for strong voices to amplify gender equality, human rights and health equity in research and in malaria planning.
- The vulnerability of populations may change in different settings, and those affected by malaria are also often at increased risk for other diseases. In addition, some groups may be particularly susceptible to malaria infection and clinical disease itself. It will be important to consider whether there are overlaps with other health or social programmes that could be leveraged to improve the targeting and delivery of malaria interventions.
- There is a need to integrate malaria programmes with primary health care, maternal and child health, and other disease programmes.
- It was noted that clinical trials also tend to exclude women and children, and high-burden countries tend to have fewer clinical trials, which contributes to the lack of data on vulnerable populations.
- It is important to assess whether women's participation is represented in existing reports and whether data are available on the extent and nature of women's involvement and influence in key decisions. In the case of Indigenous Peoples, this needs to be balanced with respect for their identities and rights. There is a need to consider access to and availability of malaria interventions and care, including diagnosis and treatment, for vulnerable populations.

2.5 Update on malaria elimination

WHO background

Malaria elimination

Globally, there has been notable progress in efforts to eliminate malaria, with more countries achieving zero indigenous cases. The number of countries reporting fewer than 10 000 cases increased by 68%, from 28 countries in 2000 to 47 in 2023 *(1)*.

Despite limited resources, implementation of the Elimination-2025 (E-2025) initiative continues. According to the *World malaria report 2024 (1)*, the following E-2025 countries and areas met their targets by the end of 2023, using 2019 as the baseline:

- Dominican Republic reached the milestone of reducing the number of indigenous cases from more than 1000 to fewer than 1000 at the end of 2023 – moving from 1291 indigenous cases to 253 over this time period.
- Ecuador also reached the milestone of reducing the number of indigenous cases from more than 1000 in 2019 (1803) to fewer than 1000 at the end of 2023 (604).
- Mexico and Nepal reached the milestone of reducing the number of indigenous cases from 100–999 in 2019 to fewer than 100 at the end of 2023, bringing their caseloads from 618 to 42 and 131 to 15, respectively.
- Saudi Arabia and Timor-Leste reported zero indigenous cases for three consecutive years (2021–2023).
- Bhutan reported zero indigenous cases for two consecutive years (2022 and 2023).

Despite these achievements, however, some countries have faced resurgences of malaria. Between 2022 and 2023, 12 countries and one territory of the E-2025 initiative reported a 40.5% increase in the number of reported cases.

In October 2024, Egypt was declared malaria-free by WHO. In January 2025, the WHO Director-General certified the elimination of malaria in Georgia. A total of 45 countries and one territory have now been awarded malaria-free certification by WHO. Currently, the Global Malaria Programme is working with several countries to prepare for certification of malaria elimination.

Work continues on the update of *A framework for malaria elimination (16)* and development of global guidance on prevention of re-establishment of malaria transmission. Both documents are expected to be finalized in 2025.

Zoonotic malaria

Since large numbers of human cases of *P. knowlesi* were reported in Malaysian Borneo in 2004, this zoonotic malaria has emerged as a significant public health concern, particularly across South-East Asia and the Western Pacific. To address the challenge of *P. knowlesi* malaria, the WHO Global Malaria Programme convened a technical consultation on control of zoonotic malaria in Geneva, Switzerland, on 5–7 November 2024 *(19)*. The meeting brought together national malaria programme managers from affected countries, members of MPAG and the Technical Advisory Group on Malaria Elimination and Certification, research experts and WHO staff. Sessions covered global and country updates, clinical aspects, vector control, reservoirs, environmental drivers, control strategies, and research and development needs.

There are currently no proven control interventions for zoonotic malaria. While some interventions such as personal protection, including chemoprophylaxis and the use of topical repellents, can be implemented immediately, these alone cannot address the increasing mosquito–macaque–human transmission through which the majority of cases are likely to occur.

The emergence of *P. knowlesi* poses unique challenges to malaria elimination, particularly for countries approaching or having achieved elimination of the "human malaria" species (*P. falciparum, P. vivax, P. malariae, P. ovale*). Currently, countries where transmission of "human malaria" has been interrupted but *P. knowlesi* cases persist cannot be officially certified by WHO as malaria-free. In response to this challenge, the Global Malaria Programme has established a subgroup on zoonotic malaria within the Technical Advisory Group on Malaria Elimination and Certification to develop procedures and requirements for certification of malaria elimination in such countries. To resolve the challenge of certifying countries where the four "human malaria" species have been eliminated but where other species continue to be transmitted, the Technical Advisory Group on Malaria Elimination and Certification subgroup on *P. knowlesi* will continue its work to finalize deliberations on *P. knowlesi* issues related to certification.

The consultation concluded that coordinated efforts are urgently needed as the burden of *P. knowlesi* increases. There was consensus that successful control will require intersectoral collaboration across health, forestry, agriculture and private sectors, along with strong community engagement. Research priorities were established, focusing on developing species-specific diagnostics, improving surveillance for risk mapping, and developing vector control and macaque management strategies to decrease the interaction between macaque and human populations. Next steps include implementing the research priorities to inform the development of specific WHO guidelines for *P. knowlesi* control.

MPAG conclusions

Elimination

MPAG congratulated the Global Malaria Programme/Technical Advisory Group on Malaria Elimination and Certification on the progress towards elimination in many countries, particularly in South-East Asia and the Americas, and the certification of Egypt and Georgia as malaria-free. The publications highlighting successes in achieving and maintaining elimination in Sri Lanka *(20)* and Uzbekistan *(21)* provide excellent references for other countries at similar stages of the process.

MPAG acknowledged that limited finances are a common concern for countries approaching elimination; however, the threats posed by the recent funding cuts may exacerbate this issue and it should be monitored. Similarly, the recent natural disaster and humanitarian crisis in Myanmar represents a threat to elimination in the Greater Mekong subregion. Supporting malaria control efforts in the area with particular attention to cross-border collaboration should be a priority, and progress should be monitored.

Zoonotic malaria

MPAG again congratulated the Global Malaria Programme/Technical Advisory Group on Malaria Elimination and Certification for their ongoing work to address zoonotic malaria, including convening the technical consultation in 2024. This meeting covered some of the key elements previously raised, notably those related to the need to develop an operational research and development agenda comprising clinical and surveillance diagnostics, community engagement and options for control. Such options include approaches targeting human and non-human primates and mosquito vectors, as well as environmental management, which should be used in an integrated manner.

MPAG concurred with need for an intersectoral approach that includes conservation and wildlife authorities to improve the understanding of the role of non-human primates in zoonotic malaria transmission.

MPAG welcomed research on vector control tools for zoonotic malaria, but highlighted the need to develop or refine preferred product characteristics for these tools. This will be important given the relatively low number of cases and variable vector densities, which could affect the ability to assess the effectiveness of these tools. Similar issues may affect other control approaches and these should be addressed accordingly.

MPAG acknowledged the challenge of certifying countries where the four "human malaria" species have been eliminated but where other zoonotic species continue to be transmitted. MPAG considers it vital that countries continue their efforts to reduce the public health burden of zoonotic malaria. MPAG recognizes that alternative certification options should be explored.

2.6 Update on vector control operational guidance

WHO background

The need to update contemporary guidance on malaria vector control is critical given the multiplicity of prevailing operational challenges. Biological threats, including insecticide resistance, spread and establishment of invasive species, and changes in vector behaviour, could potentially compromise the effectiveness of critical interventions. Nevertheless, enhanced research and innovation have provided hope and the opportunity to circumvent these constraints. While some innovative tools, including spatial repellents, new active ingredients for IRS and ITNs, and new approaches to larval source management, have been proposed and developed and requisite guidance promulgated, other tools are still at various stages of development. At the same time, technical support and capacity-building to strengthen the translation of guidance into tangible operational action have lagged and require reinvigoration and concerted effort. Accordingly, the Vector Control Advisory Group and MPAG continue to provide guidance and recommendations on the requisite actions to be undertaken by the WHO Global Malaria Programme.

Since October 2024, the Vector Control and Resistance Unit has conducted multiple activities in alignment with Vector Control Advisory Group and MPAG guidance and recommendations, including enhancing the efficiency of the vector control tool development process by ceasing the Global Malaria Programme's requirement for comparative efficacy data to avoid duplication with the Prequalification Team - Vector Control Product Assessment. In this regard, determination of intervention class will be made at the time of the request for determination of pathway and potentially in consultation with the Guideline Development Group. This change has been communicated at multiple meetings and through a WHO information note *(22)*. The 21st meeting of the Vector Control Advisory Group was held from 21 to 25 October 2024. In addition to the seven intervention classes, the Vector Control Advisory Group discussed considerations for the evaluation of genetically modified mosquitoes. The meeting acknowledged the need for potential substitute approaches for demonstrating public health value that differ from randomized controlled trials, such as those generating evidence through laboratory and confined field trials. It was noted that randomized controlled trials are not a requirement for the establishment of WHO recommendations. As the Vector Control Advisory Group is valuable across various diseases and departments, efforts are under way to make it more functional by revisiting procedures to improve its efficiency and responsiveness to the need, refining its terms of reference to address the needs of all parties with vested interests, and clarifying roles and responsibilities among relevant departments to consolidate collaboration. A Guideline

Development Group meeting was convened from 2 to 4 December 2024 to discuss advances in IRS and spatial repellents, and changes to comparative efficacy requirements. To ensure comprehensive support for activities, the Vector Control and Resistance Unit collaborated with other units within the Global Malaria Programme on technical consultations and revision of guidance. In addition, the Vector Control and Resistance Unit collaborated externally with WHO regional offices and partners on biological threats to vector control, supporting entomological surveillance and integrated vector management.

In 2025, the Vector Control and Resistance Unit plans to undertake a series of priority key actions encompassing the following: publishing an update to the 2013 larval source management operational manual *(23)* in Q3 2025, which emphasizes integration of larval control for malaria and arbovirus vectors, including by harnessing the technology for detecting and treating larval sites. The Guideline Development Group is scheduled to meet in 2025 to discuss further updates to the consolidated *WHO guidelines for malaria (5)*. A "living guideline" approach is being considered for some vector control tools in order to maintain viability and avoid periodic (and costly) systematic reviews. Informed by the request of applicants, the next Vector Control Advisory Group meeting will be held in November 2025. The Vector Control and Resistance Unit will provide support to the WHO Regional Office for Africa for addressing the increasing challenge of vector-borne diseases. This support will require effective collaboration among scientists, technical agencies, implementers, regional networks, policy-makers and communities. Overall, vector control efforts will be optimized to maximize impact through more efficient, effective, integrated and equitable implementation of interventions. The Vector Control and Resistance Unit will provide support to improve entomological surveillance, including the tracking and management of biological and other threats to vector control, collaboration of partners on innovative tools, and prioritization and targeting of interventions, with increased viability of the multisectoral response by harnessing the *Global vector control response 2017–2030 (24)*.

MPAG conclusions

MPAG recognized the progress made in malaria vector control and commended recent guidance updates. Members emphasized the need for continued discussions on ways to enhance the effectiveness and sustainability of vector control interventions.

First, MPAG emphasized the importance of simplifying the guidelines for evaluating vector control products and welcomed the refined comparative efficacy process. This updated process removes the Global Malaria Programme's requirement for comparative efficacy data, which had previously duplicated the prequalification process. These changes are expected to enhance the overall efficiency of vector control product evaluation. MPAG also highlighted the need to better distinguish between the respective roles of the Vector Control Advisory Group and the Guideline Development Group. The Vector Control Advisory Group plays a key role in supporting the design of high-quality studies that generate evidence on the public health value of new vector control tools, whereas the development of WHO guidelines and recommendations falls under the mandate of the Guideline Development Group. MPAG recommends that this distinction be widely communicated to stakeholders.

Second, MPAG noted the missed opportunities to integrate vector control strategies with the climate change mitigation and adaptation agenda. It was suggested that this issue be revisited to ensure that vector control frameworks are responsive to emerging climate-related challenges.

Third, MPAG acknowledged operational challenges but stressed the importance of prioritizing sustainable vector control interventions, with a focus on insecticide resistance monitoring. MPAG encouraged the use of multiple data sources to inform evidence-based decisions.

Fourth, MPAG supported the convening of a Guideline Development Group to review evidence on potential recommendations for spatial repellents (emanators), recognizing their potential to diversify the vector control toolbox. It was noted, however, that the existing evidence primarily supports the indoor use of spatial repellents in combination with ITNs. MPAG also noted that the final recommendations should make it clear that more data will be needed on their efficacy in different settings, in settings with low ITN coverage and in temporary shelters. In emergency settings, where IRS and ITNs may not be feasible, MPAG urged the inclusion of spatial repellents as part of the vector control toolkit.

Lastly, MPAG emphasized the need for a more consultative process for developing consolidated implementation guidance on ITNs. This should include a broad range of stakeholders and should consider other malaria control strategies, including case management, surveillance, vaccines, seasonal malaria chemoprevention and IRS. MPAG supported the Global Malaria Programme's efforts to revise the operational frameworks for integrated vector management and to update the *Global plan for insecticide resistance management in malaria vectors (25).*

2.7 Drug resistance surveillance in Africa

WHO background

An overview of available data in Africa confirmed patterns of antimalarial drug resistance and persistent gaps in knowledge. Four countries (Eritrea, Rwanda, Uganda and the United Republic of Tanzania) have confirmed artemisinin partial resistance, characterized by delayed parasite clearance and the presence of validated molecular markers of resistance. An additional four countries (Ethiopia, Namibia, Sudan and Zambia) have suspected resistance, with over 5% of samples carrying validated or candidate markers, although with no corresponding clinical evidence of delayed clearance. Therapeutic efficacy studies (TES) have reported high treatment failure rates in several countries, although interpretation remains challenging due to variability in study design, absence of partner drug molecular markers, difficulty distinguishing reinfection from recrudescence, and inconsistent adherence to standardized WHO TES protocols. The possibility of emerging lumefantrine resistance in Africa remains an open question. TES data show high failure rates of artemether-lumefantrine in six countries, but confounding factors such as protocol deviations, unsupervised treatment, lack of lumefantrine blood concentration measurements, and variability in genotyping methods make conclusions uncertain. Additional evidence from returning travellers and ex vivo and in vitro sensitivity studies adds complexity; for example, lower lumefantrine sensitivity has been observed in northern Uganda, and infections isolated from travellers have shown elevated EC50 values. These findings collectively underscore the urgent need for more robust, standardized and timely data to guide surveillance and resistance response strategies.

WHO has initiated a series of technical consultations and activities on monitoring molecular markers of resistance to antimalarial drugs and improving data quality of TES. A compendium of molecular markers is being developed to support the prioritization of surveillance and research, with markers systematically categorized based on the strength of available evidence. To improve data reliability, an external quality assurance scheme is being established to support laboratories in the generation of high-quality molecular data. In addition, WHO plans to convene experts to develop a roadmap for accelerating the identification of new molecular markers of resistance. In parallel, WHO is updating technical guidance and study protocols on antimalarial drug efficacy surveillance. A virtual consultation in October 2024 reviewed definitions and thresholds used for identifying artemisinin partial resistance. Classification criteria for validated and candidate *Kelch 13* markers were maintained, promoting research and generation of additional evidence, as thresholds may need to be adjusted for the African context. The definition of suspected artemisinin partial resistance areas was refined to include regions where ≥ 5% of patients carry resistance-associated *Kelch 13* mutations. To improve TES data quality, a roster of consultants was established and trained in December 2024 to support protocol review, training and site visits.

Disruptions to malaria control programmes will have serious consequences for both the disease burden and the development of antimalarial drug resistance. A reduction in vector control and chemoprevention efforts is likely to result in increased malaria cases and outbreaks, placing greater pressure on already strained public health systems. This increased patient load, combined with limited supplies of rapid diagnostic tests, may lead to higher consumption of artemisinin-based combination therapies (ACTs). When ACT supplies are also interrupted, patients may turn to the private sector, where inadequate treatment practices are prevalent. In this setting, presumptive treatment is common, leading to subtherapeutic exposure to antimalarials and irrational use of injectable artemisinin-based medicines. These factors heighten the risk of resistance emerging and spreading. This is occurring in a context where support for TES is declining, reducing the ability to detect decreases in efficacy and monitor the emergence and spread of resistance.

MPAG conclusions

MPAG sees antimalarial drug resistance as an urgent issue. The recent reduction in funding resources will adversely impact quality of care for malaria and the monitoring of and response to antimalarial drug resistance, leading to major negative consequences. Private sector engagement, suboptimal use of artemisinin monotherapies and approved combination therapies, and the need to strengthen subregional networks were identified during this session as extremely important issues. This advice builds on previous MPAG recommendations, specifically the earlier recommendations to implement MFT as a key policy change to mitigate the emergence of antimalarial drug resistance, and to add single, low-dose primaquine to antimalarial treatment regimens in areas of artemisinin resistance. MPAG continues to emphasize the importance of these two previous recommendations.

MPAG congratulated Global Malaria Programme staff on progress made since the last MPAG meeting in October 2024. Specifically, there has been substantial progress made in re-establishing or strengthening subregional networks to coordinate the response to antimalarial drug resistance, with concrete implementation plans. It was noted that five African countries (Nigeria, Rwanda, Sudan, Uganda and the United Republic of Tanzania) are planning to implement MFT, with Rwanda beginning in 2025. An initial review of artemisinin partial resistance in Africa and Asia, with input from a group of experts, has been completed, and another meeting will be held once there is a sufficient body of new data. The development of a compendium of molecular markers of antimalarial drug resistance for use by national malaria programmes and researchers is ongoing.

MPAG gave the following advice:

- The Global Malaria Programme's review of artemisinin partial resistance across Africa and its compendium of molecular markers of antimalarial drug resistance are key priorities, with the goal of providing deliverables by the end of 2025 or early 2026.
- Teams working on surveillance of antimalarial drug resistance should be continuously encouraged to ensure that they adopt standardized protocols that yield high-quality data and that these are rapidly communicated to the Global Malaria Programme.

- The current standard protocol for TES is currently under review, and the option of a simplified TES may be considered as an additional surveillance tool. MPAG is fully supportive of this review, in light of the current need to generate key data at a lower cost because of reduced resources.
- The Global Malaria Programme's workload for developing norms and standards, and providing coordination, data sharing and capacity-building is vast. Stakeholders are vigorously encouraged to increase their support for this work by the Global Malaria Programme.

2.8 Update on coordination of response to antimalarial drug resistance in Africa and establishment of subregional networks

WHO background

To minimize the threat and impact of the rapid expansion of partial artemisinin resistance across Africa, WHO released the *Strategy to respond to antimalarial drug resistance in Africa (26)* in November 2022. Its objectives are to: i) improve the detection of resistance to ensure a timely response; ii) delay the emergence of resistance to artemisinin and ACT partner drugs; and iii) limit the selection and spread of resistant parasites where resistance has been confirmed. The Strategy recognizes among the key enablers the need for strong cross-country coordination to maximize impact through the mutualization of effort, knowledge and resources. WHO convened a regional stakeholder meeting on antimalarial drug resistance in Africa in Uganda in November 2023 *(27)*, during which participants agreed on: i) establishing and supporting subregional networks to generate data for drug policy decisions; ii) supporting the development and implementation of tailored national action plans against resistance; iii) creating a coordinated platform to align efforts across stakeholders; and iv) mobilizing resources, sustained collaboration and political commitment. At its previous meeting in October 2024 *(28)*, MPAG reviewed the urgent issue of artemisinin partial resistance and recommended: i) the re-establishment or strengthening of subregional networks in Africa to conduct TES and molecular surveillance, coordinate activities, share data and information, and implement training and capacity development; ii) the expansion of surveillance in all parts of Africa, not just in the current hotspots of artemisinin partial resistance; iii) the mobilization of Ministers of Health and Heads of States on the need for urgent action; and iv) the development of a coordinated action plan to secure a much higher level of sustainable funds to combat resistance in Africa.

Building on these efforts, the "Big Push" multi-stakeholder initiative identified antimalarial drug resistance as a critical priority, requiring strengthened regional and multi-country coordination. To address this, RBM Partnership, in collaboration with WHO, convened a global consultation aimed at: i) developing a shared understanding of challenges through review of the current state of antimalarial drug resistance and surveillance in Africa and ongoing activities, and discussion of priorities and coordination; and ii) developing a concrete roadmap to define strategies, roles and mechanisms for improved coordination of the response to antimalarial drug resistance at the subregional and global levels, leveraging existing structures and networks to the extent possible. The participants agreed to focus on the following priority challenges: i) sharing of quality data; ii) improving capacity to implement TES and molecular marker surveillance; iii) developing strategy and implementation plans for diversification of ACTs; and iv) translating surveillance data into treatment policy action. In terms of subregional networks, the participants emphasized learning from previous mechanisms, such as the East African Network for Monitoring Antimalarial Treatment, which successfully involved national malaria programmes as central to implementation, requiring their perspectives to shape strategies and information flow.

Discussions also stressed the importance of leveraging existing structures, such as regional economic communities, to ensure sustainability and foster political commitment. As priority subregional activities requiring coordination, the participants agreed on the need to develop platforms for timely data sharing and to support national malaria programmes/policy-makers in understanding surveillance data and updating national malaria treatment policies. The participants also proposed mechanisms to effectively coordinate subregional activities across the four subregions: East Africa (including the Horn of Africa), Southern Africa, West Africa and Central Africa. For each subregion, there could be a dual-level mechanism with: i) technical networks to oversee implementation, leveraging existing structures where they exist; and ii) a political umbrella for high-level engagement, advocacy and financial sustainability. The consultation concluded with commitments to operationalize the agreed coordination structures, with focal points identified for each subregion, and a roadmap with proposed timelines for developing a structured concept note and budget to ensure subregional coordination to combat antimalarial drug resistance. For global coordination, a small working group will be assembled following a consultation to refine the list of topics requiring collaboration, with identified lead organizations to organize thematic discussions, culminating in an annual RBM Partnership/WHO co-convened meeting to share updates on progress.

MPAG conclusions

MPAG recognized the difficulties of accurately mapping drug resistance markers and identifying reductions in therapeutic efficacy based on robust and high-quality studies, and the timeliness with which those data are made available to the Global Malaria Programme and the broader scientific and control communities. It is important that validated molecular markers of antimalarial drug resistance and TES results be rapidly shared with national malaria programmes to support treatment policy changes. This can be done within the framework of subregional networks in which national malaria programmes are the main stakeholders, supported by academia and other technical partners. Regional networks are important to help standardize data collection (TES, molecular markers, in vitro studies including phenotypic data), coordinate treatment policies across the region, and identify research priorities, with important roles to be played by the WHO Regional Office for Africa, WHO Regional Office for the Eastern Mediterranean, Africa Centres for Disease Control and Prevention and RBM Partnership. MPAG commended the collaboration between the Global Malaria Programme and RBM Partnership on leadership and technical levels that is supporting the effective implementation of subregional networks. These could be supported by existing structures, such as the West African Network of Excellence for TB, AIDS and Malaria supported by the European and Developing Countries Clinical Trials Partnership. In the current international context of reduced financial support for development aid, securing funding for these subregional networks may be challenging.

The WHO Regional Office for Africa and Africa Centres for Disease Control and Prevention are working together to facilitate the adoption of MFT and coordinate the strengthening of national public health laboratories to improve coordination of malaria molecular surveillance – work that is currently supported by several donors. Questions were raised about the introduction and implementation of MFT, considering the cost implications of some alternative ACTs, particularly artesunate-pyronaridine and dihydroartemisinin-piperaquine, for which actual unit costs would benefit from the outcomes of intentional market-shaping initiatives led by malaria funding partners.

MPAG had the following advice:

- The Global Malaria Programme and WHO regional offices should continue to support the creation of the subregional networks to strengthen antimalarial drug resistance surveillance across the African continent.

- MFT should be promoted across the African continent as part of the response to the threat of antimalarial drug resistance.
- Increased funding to support the subregional networks is essential to effectively tackle antimalarial drug resistance.

References[1]

1. World malaria report 2024: addressing inequity in the global malaria response. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/379751).

2. Global technical strategy for malaria 2016–2030, 2021 update. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/342995).

3. Annex 2. Yaoundé Declaration: declaration for accelerated malaria mortality reduction in Africa: commitment that "no one shall die from malaria". In: Tackling malaria in countries hardest hit by the disease: ministerial conference report, Yaoundé, Cameroon, 6 March 2024. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/379044).

4. Estimating the potential malaria morbidity and mortality avertable by the President's Malaria Initiative in 2025: a geospatial modelling analysis [website]. Malaria Atlas Project; 2025 (https://malariaatlas.org/project-resources/pmi-2025/).

5. WHO guidelines for malaria – 30 November 2024. Geneva: World Health Organization; 2024 (https://app.magicapp.org/#/guideline/LwRMXj).

6. Response plan to pfhrp2 gene deletions, second edition. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/379469).

7. Multiple first-line therapies as part of the response to antimalarial drug resistance: an implementation guide. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/379576).

8. Egypt is certified malaria-free by WHO [news release]. World Health Organization; 20 October 2024 (https://www.who.int/news/item/20-10-2024-egypt-is-certified-malaria-free-by-who).

9. Georgia certified malaria-free by WHO [news release]. World Health Organization; 23 January 2025 (https://www.who.int/news/item/23-01-2025-georgia-certified-malaria-free-by-who).

10. Highlights from the Global Malaria Programme: annual report 2024. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/380903).

11. World Malaria Day 2025 [website]. World Health Organization; 2025 (https://www.who.int/campaigns/world-malaria-day/2025).

12. New and updated WHO malaria guidance [website]. World Health Organization (https://www.who.int/teams/global-malaria-programme/guideline-development-process/new-and-updated-malaria-guidance).

13. World malaria report 2023. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/374472).

14. Klepac P, Hsieh JL, Ducker CL, Assoum M, Booth M, Byrne I et al. Climate change, malaria and neglected tropical diseases: a scoping review. Trans R Soc Trop Med Hyg. 2024;118(9):561–79 (https://doi.org/10.1093/trstmh/trae026).

15. WHO malaria terminology, 2021 update. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/349442).

1. All references were accessed on 27 May 2025.

16. A framework for malaria elimination. Geneva: World Health Organization; 2017 (https://iris.who.int/handle/10665/254761).

17. Malaria surveillance, monitoring and evaluation: a reference manual. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/272284).

18. Oumou Diallo O, Diallo A, Toh KB, Diakite N, Dioubate M, Runge M et al. Subnational tailoring of malaria interventions to prioritize the malaria response in Guinea. Malar J. 2025;24(1):62 (https://doi.org/10.1186/s12936-025-05302-z).

19. Technical consultation on control of zoonotic malaria: meeting report, Geneva, Switzerland, 5–7 November 2024. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/381500).

20. Towards a malaria-free world: elimination of malaria and prevention of re-establishment in Sri Lanka. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/376553).

21. Towards a malaria-free world: elimination of malaria in Uzbekistan. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/375819).

22. Assessing new malaria vector control products [information note]. World Health Organization; 19 December 2024 (https://www.who.int/groups/vector-control-advisory-group/assessing-new-malaria-vector-control-products).

23. Larval source management: a supplementary malaria vector control measure: an operational manual. Geneva: World Health Organization; 2013 (https://iris.who.int/handle/10665/85379).

24. World Health Organization, UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases. Global vector control response 2017–2030. Geneva: World Health Organization; 2017 (https://iris.who.int/handle/10665/259002).

25. Global plan for insecticide resistance management in malaria vectors. Geneva: World Health Organization; 2012 (https://iris.who.int/handle/10665/44846).

26. Strategy to respond to antimalarial drug resistance in Africa. Geneva: World Health Organization; 2022 (https://iris.who.int/handle/10665/364531).

27. Regional stakeholder meeting on the response to antimalarial drug resistance in Africa: meeting report, Kampala, Uganda, 7–8 November 2023. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/380766).

28. WHO Malaria Policy Advisory Group: meeting report, 1–3 October 2024. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/380287).

Annex 1. Declarations of interest

All sixteen MPAG members participating in the meeting updated their declarations of interest in advance of the meeting, which were assessed by the WHO Secretariat. Thirteen members reported interests, which are summarized on the WHO website *(1)*. No MPAG members reported specific interests regarding relevant April 2025 agenda topics for decision. It was assessed that all members could fully participate in all sessions.

Reference

1. 27th meeting of the Malaria Policy Advisory Group (MPAG) [website]. World Health Organization; 2025 (https://www.who.int/news-room/events/detail/2025/04/08/default-calendar/27th-meeting-of-the-malaria-policy-advisory-group).

Annex 2. Agenda

Tuesday, 8 April 2025			
Session 1		**Open**	
13:00 – 13:10	Welcome by the Chairperson, MPAG	Professor Dyann Wirth MPAG Chairperson	
13:10 – 13:15	Opening remarks	Dr Jérôme Salomon Assistant Director-General UCN	
13:15 – 13:45	Report from the Director, GMP	Dr Daniel Ngamije M. Director, Global Malaria Programme	
Session 2		**Open**	
13:45 – 14:15	Responding to changes in global malaria resourcing and architecture	Dr Dorothy Achu, Regional Malaria Advisor, WHO AFRO Tropical and Vector borne Diseases	
Session 3		**Open**	
14:15 – 15:00	Subnational tailoring of malaria interventions and strategies manual status update	Dr Arnaud Le Menach Unit Head, Strategic Information for Response, Global Malaria Programme	**For information**
Session 4		**Open**	
15:30 – 16:00	Equity, gender equality and human rights in reducing malaria	Ms Mwalenga Nghipumbwa, Technical Officer, Strategic Information for Response, Global Malaria Programme	
Session 5		**Open**	
16:00 – 16:30	Vector Control: Spatial repellents, IRS, ATSBs & ITN systematic review	MPAG Sub-Committee drug resistance Dr Emmanuel Chanda, Unit Head, Vector Control and Insecticide Resistance Unit, Global Malaria Programme	

Wednesday, 9 April 2025			
			Open
13:00 – 13:05	Welcome back by the Chairperson, MPAG	Professor Dyann Wirth MPAG Chairperson	
Session 6			**Open**
13:05 – 14:00	Update on malaria elimination and Zoonotic malaria update	MPAG Sub-Committee zoonotic malaria Dr Elkhan Gasimov, Unit Head, Elimination Unit, Global Malaria Programme	**For advice**

Session 7			Open
14:00 – 15:30	Drug resistance	MPAG Sub-Committee drug resistance	**For advice**
	a) Drug resistance surveillance in Africa	Ms Charlotte Rasmussen, Technical Officer, Diagnostics, Medicines & Resistance, Global Malaria Programme	
	b) Multi first line therapy implementation	Dr Peter Olumese, Medical Officer, Diagnostics, Medicines & Resistance, Global Malaria Programme	
	c) Update on coordination of response to antimalarial drug resistance in Africa and establishment of subregional networks	Dr Andrea Bosman, Unit Head, Diagnostics, Medicines & Resistance, Global Malaria Programme, Dorothy Achu, Team Lead TVD, WHO AFRO Ghasem Zamani, RMA EMRO	
Session 8		**Closed (MPAG members & WHO secretariat)**	
13:00 – 16:30	Finalization of conclusions	Professor Dyann Wirth MPAG Chairperson	**For advice**

Thursday, 10 April 2025			
Session 9		**Closed (MPAG members & WHO secretariat)**	
13:00 – 16:30	Finalization of conclusions	Professor Dyann Wirth MPAG Chairperson	**For advice**

Annex 3. List of participants

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