World Health Organization

Background documentation for Day 2

This file contains the slides that were shown by the presenters during Day 2 of the meeting as well the background documentation shared with MPAG members ahead of the meeting.

Wednesday, 9 April 2025			
		Open	
13:00 – 13:05	Welcome back by the Chairperson, MPAG	Professor Dyann Wirth MPAG Chairperson	
	Session 5	**Open**	
13:05 – 14:00	Updates on a) malaria elimination b) zoonotic malaria Background document | Presentation	MPAG Sub-Committee zoonotic malaria Dr Elkhan Gasimov, Unit Head, Elimination Unit, Global Malaria Programme	**for advice**
	Session 6	**Open**	
14:00 – 14:30	Vector control updates on operational guidance Background document | Presentation	Dr Emmanuel Chanda, Unit Head, Vector Control and Insecticide Resistance Unit, Global Malaria Programme	**for information**
	Session 7	**Open**	
14:45 – 15:45	Drug resistance a) Drug resistance surveillance in Africa Presentation b) Update on coordination of response to antimalarial drug resistance in Africa and establishment of subregional networks Background document | Presentation	MPAG Sub-Committee drug resistance Ms Charlotte Rasmussen, Technical Officer, Diagnostics, Medicines & Resistance, Global Malaria Programme Dr Andrea Bosman, Unit Head, Diagnostics, Medicines & Resistance, Global Malaria Programme, Dr Dorothy Achu, Team Lead TVD, WHO AFRO Dr Ghasem Zamani, Regional Malaria Adviser, EMRO	**for advice**

27th meeting of the Malaria Policy Advisory Group
8–10 April 2025, Geneva, Switzerland
Background document for Session 5

Update on malaria elimination and zoonotic malaria

Update on 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 the World Health Organization (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 (2)* 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 *Plasmodium 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. The meeting brought together national malaria programme managers from affected countries, members of the Malaria Policy Advisory Group 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.

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. 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.

References

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

Malaria Policy Advisory Group meeting
8-10 April 2025

Update on malaria elimination
Zoonotic malaria

Dr. Elkhan Gasimov
Head of elimination unit
Global Malaria Program
World Health Organization

World Health Organization

Outline of the presentation

1. Malaria elimination
    - 1.1 Situation in E-2025 countries and GMS countries
    - 1.2 Progress on certification of malaria elimination
    - 1.3 Guidance, capacity building, best practices

2. Zoonotic malaria
    - 2.1 Situation in affected countries
    - 2.2 Update on the Technical consultation on control of zoonotic malaria

World Health Organization

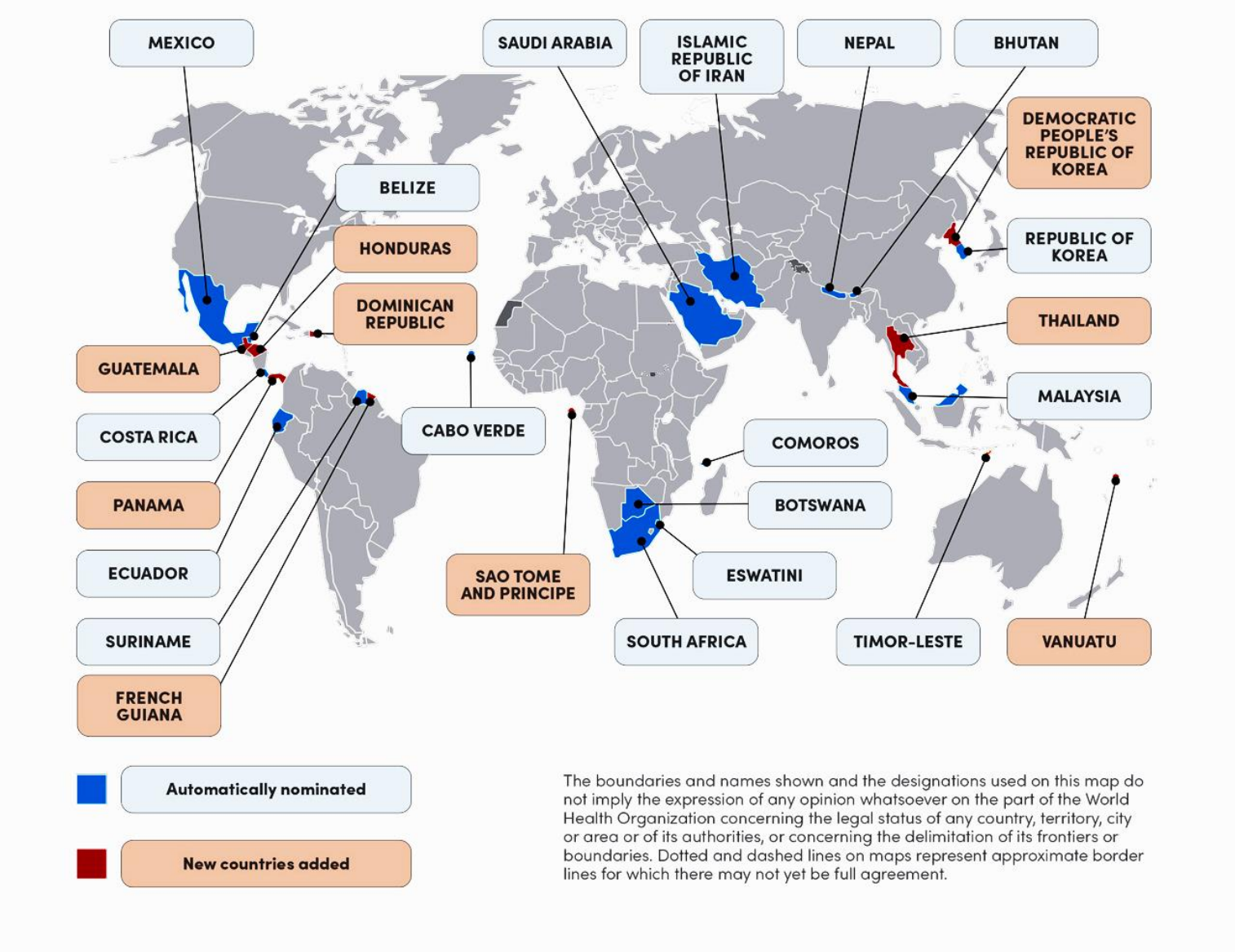
1. Malaria elimination

World Health Organization

1.1 Situation in E-2025 countries and GMS countries

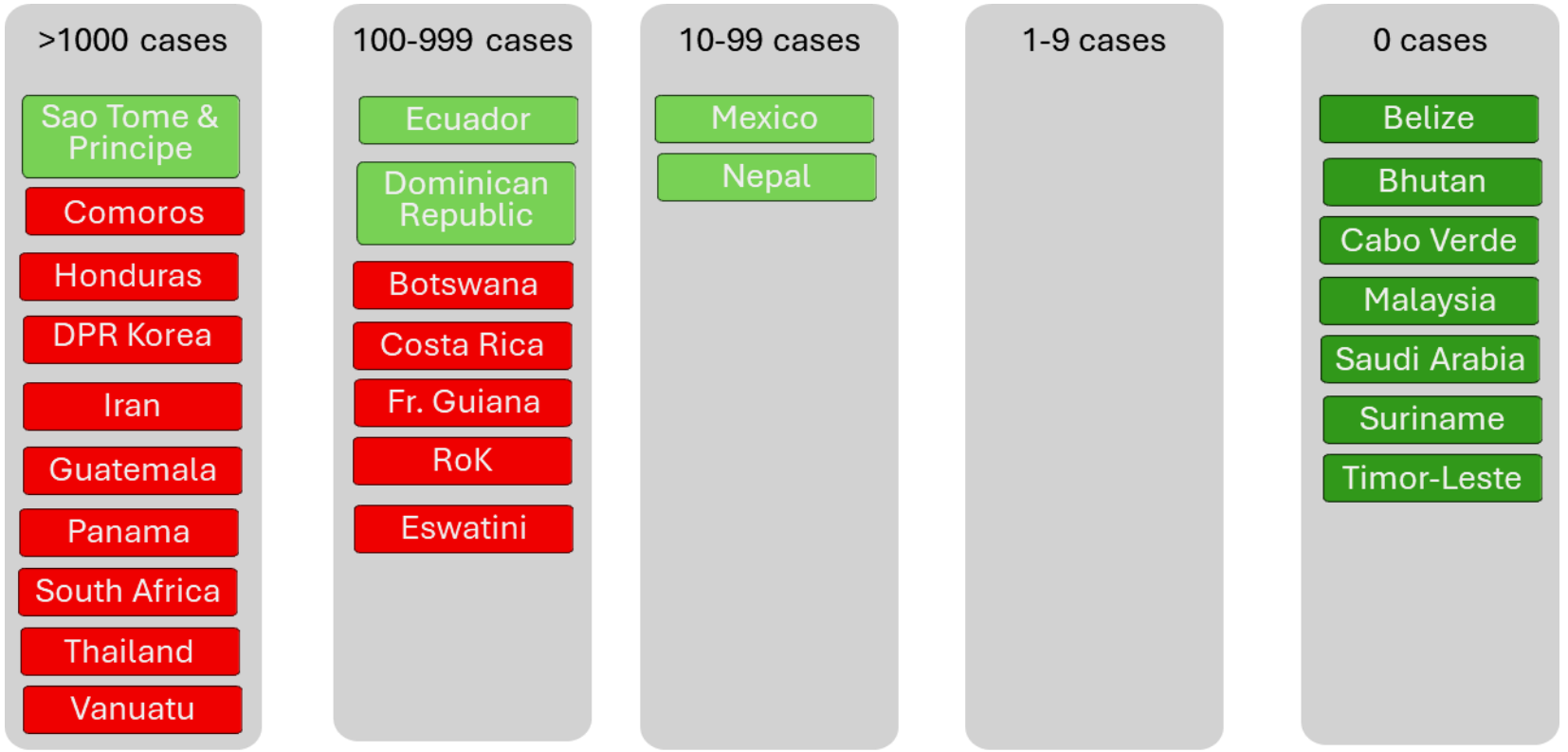
World Health Organization

Countries and territories selected for the E-2025 initiative



World Health Organization

Where we are in 2023



Reporting more cases than in 2019

Reporting less cases than in 2019

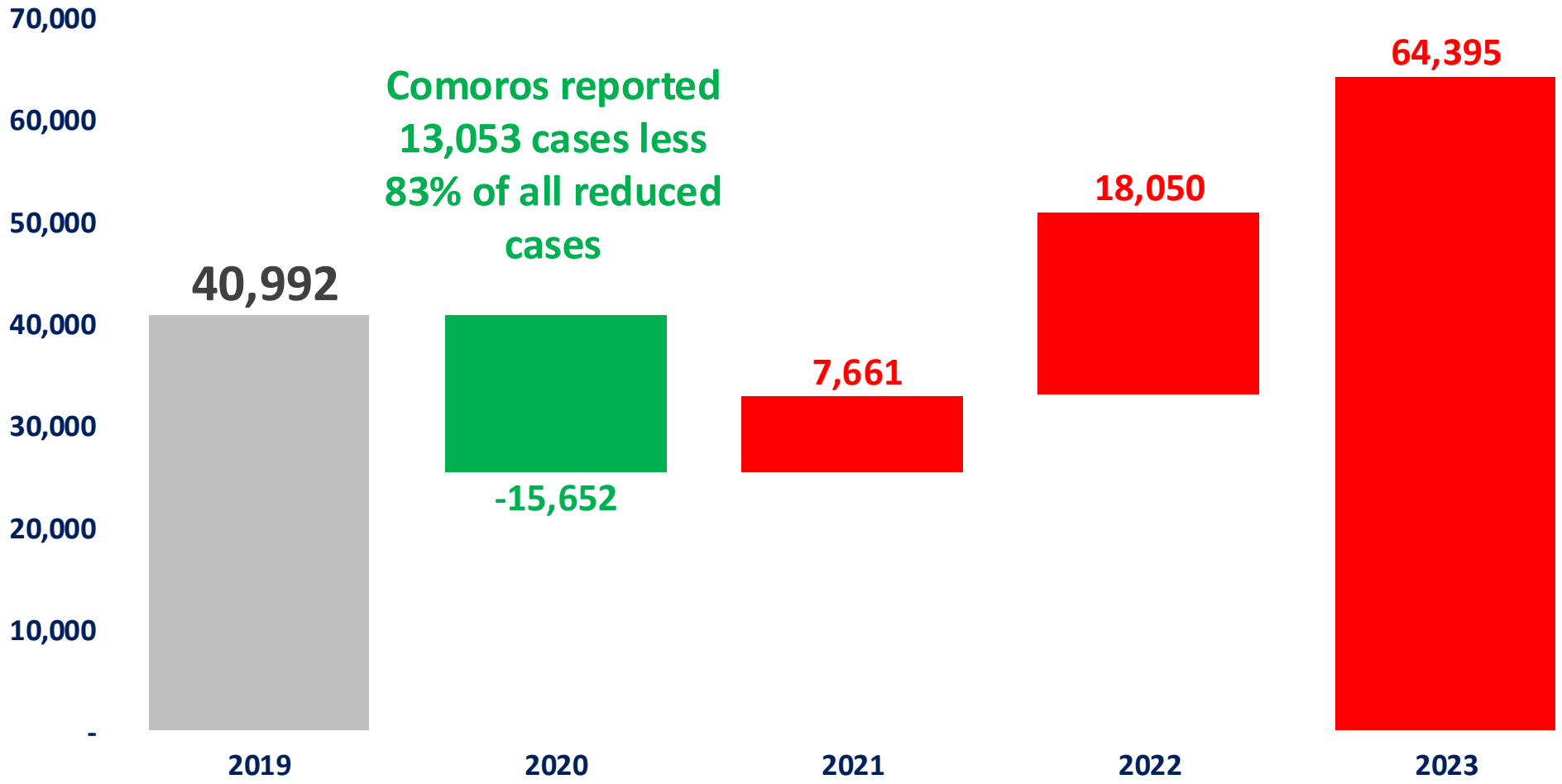
Reporting zero indigenous cases

Certified in 2023 – 2025

- Azerbaijan
- Belize
- Cabo Verde
- Egypt
- Georgia
- Tajikistan

World Health Organization

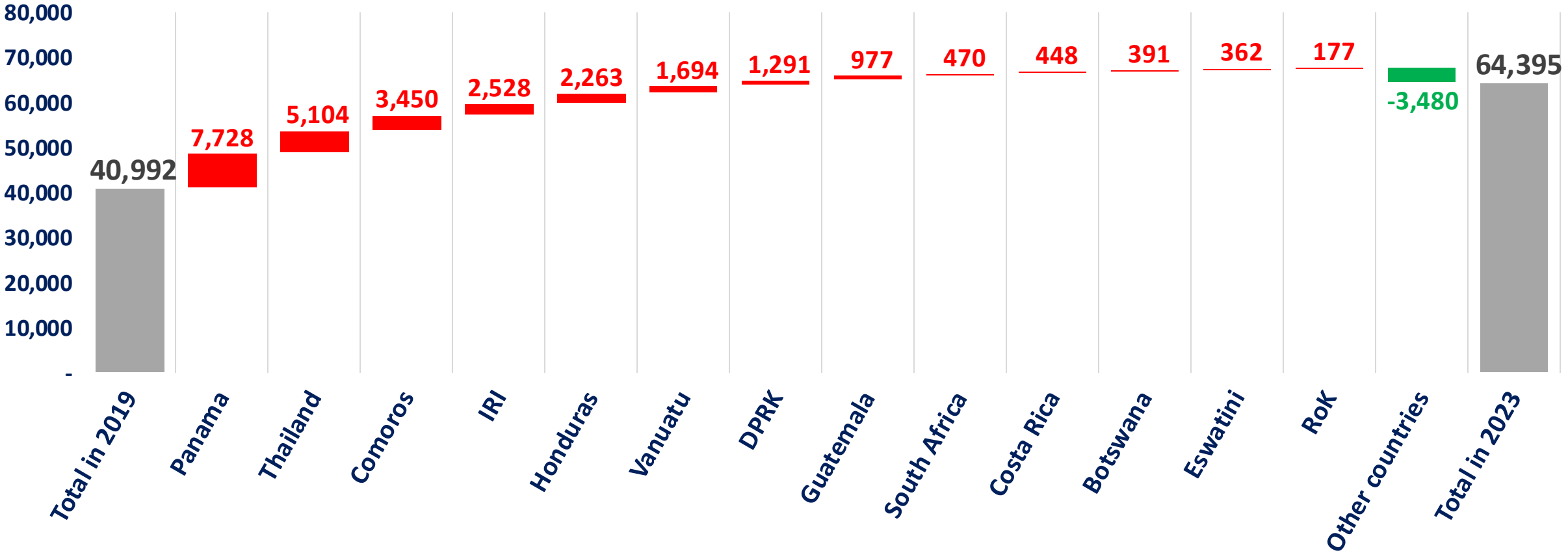
Changes in reported cases in E-2025 initiative countries by year



23,403 more cases
57% increase

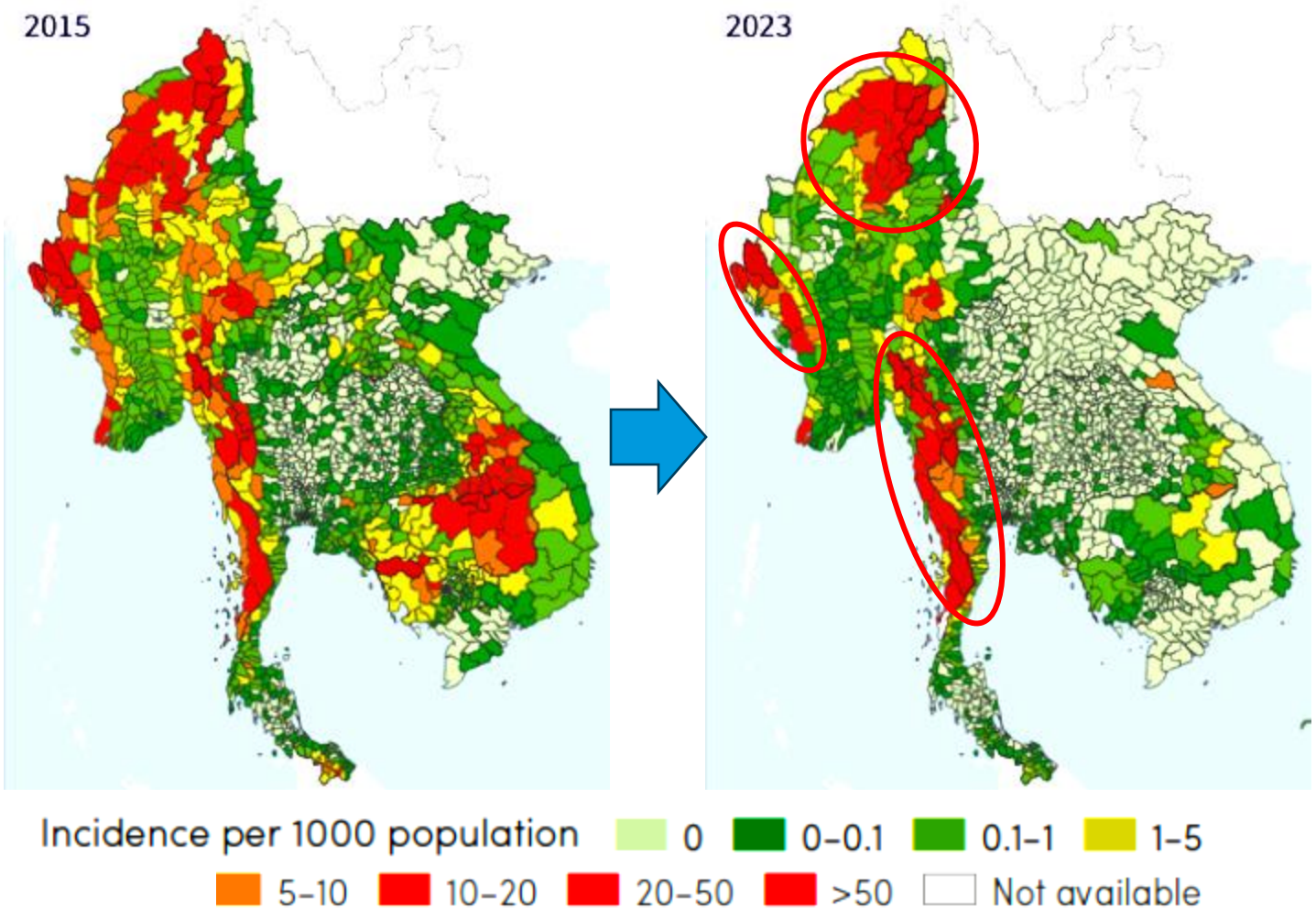
World Health Organization

Changes in reported cases in E-2025 initiative countries by countries



World Health Organization

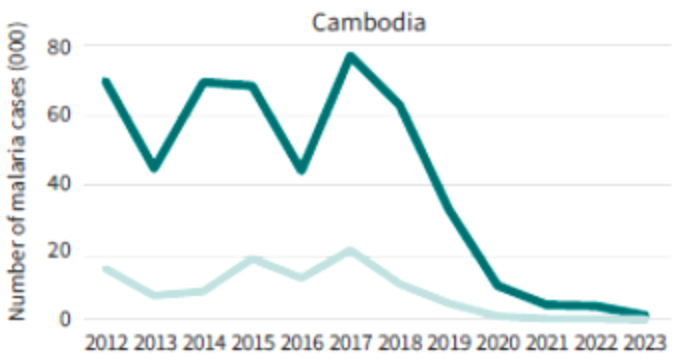
Situation in Greater Mekong subregion, 2023

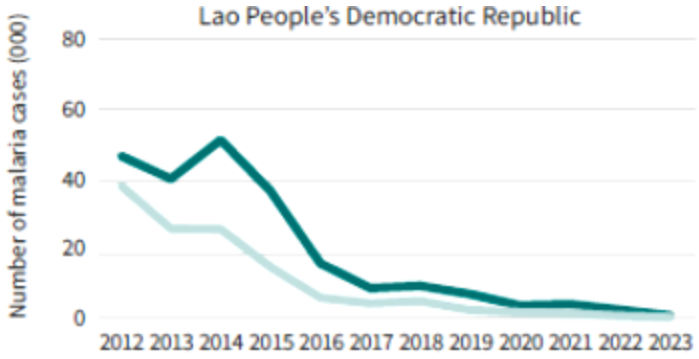


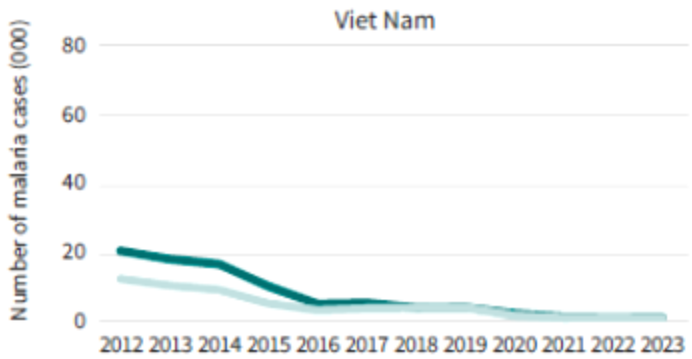
- **Myanmar:**
  - 95.2% of all indigenous malaria cases and 99.1% of *P. falciparum* cases
- **Thailand:** cases reported by districts along Myanmar border account for 89% of total cases reported countrywide.
- Malaria cases along **Thailand-Myanmar border** account for **34% of total cases reported in GMS**.
- **21 deaths** in Myanmar (15), Thailand (5) and Cambodia (1)
- **ACTs are highly efficacious**

World Health Organization

Situation in Greater Mekong subregion, 2023







2024 (preliminary data)

	Cambodia	Lao PDR	Viet Nam
Death	0	0	0
Confirmed cases (indigenous + imported)	355	342	353
Indigenous P. falciparum cases	2	41	202*
Indigenous P. vivax cases	294	289	70*
Other cases (mixed +other species)	26	12	81*
Imported cases	33	0	111

*Includes both indigenous and imported

World Health Organization

Impact of USG withdrawal from WHO and halting support to malaria programmes

- Reduction of malaria burden in countries leads to **lowering interest** of the international community and donor organizations **for continuing support**.
  - Risk of **de-prioritizing elimination efforts**
  - Risk of **resurgences**
- In many malaria-eliminating countries, the last cases of malaria are concentrated among populations experiencing marginalization and social exclusion.
  - Risk to **equitable access to gender-responsive, community-driven interventions**.

World Health Organization

1.2 Update on certification of malaria elimination

World Health Organization

Certification of malaria elimination

- 45 countries and 1 territory have been certified malaria-free
- 61 countries listed in supplementary list

Suriname

- Official request is expected in November 2024
- Final independent evaluation mission is planned on 7-16 April 2025

Timor-Leste

- Official request is received in September 2023
- Final independent evaluation mission is planned on 28 April – 07 May 2025

Turkiye

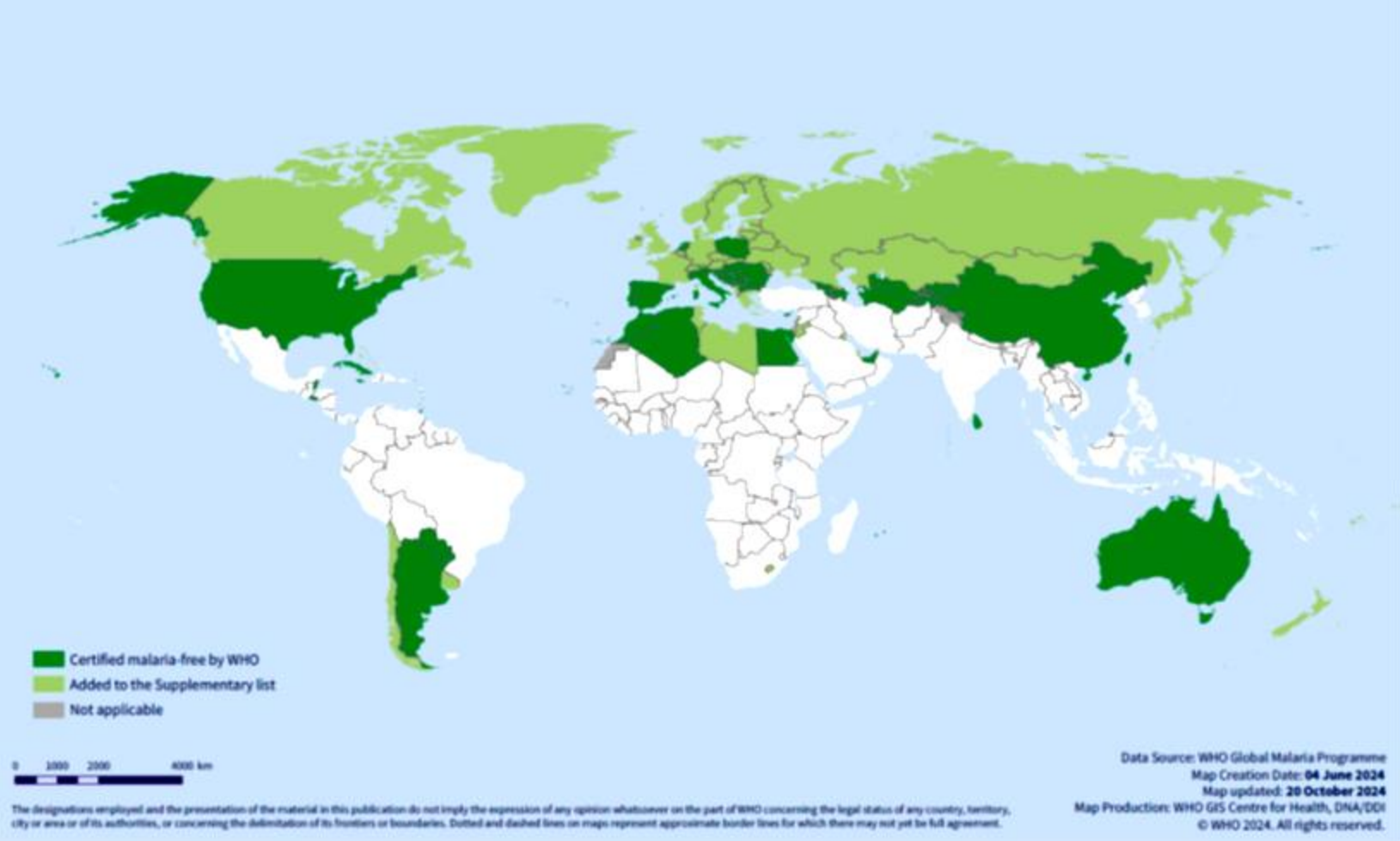
- Official request is received in June 2024
- Certification is planned in 2025

Saudi Arabia **Oman** **Bhutan**

Eligible for certification
No official request received

World Health Organization

Countries and territories certified malaria-free by WHO and countries where malaria never existed or disappeared without specific measures (Supplementary list)

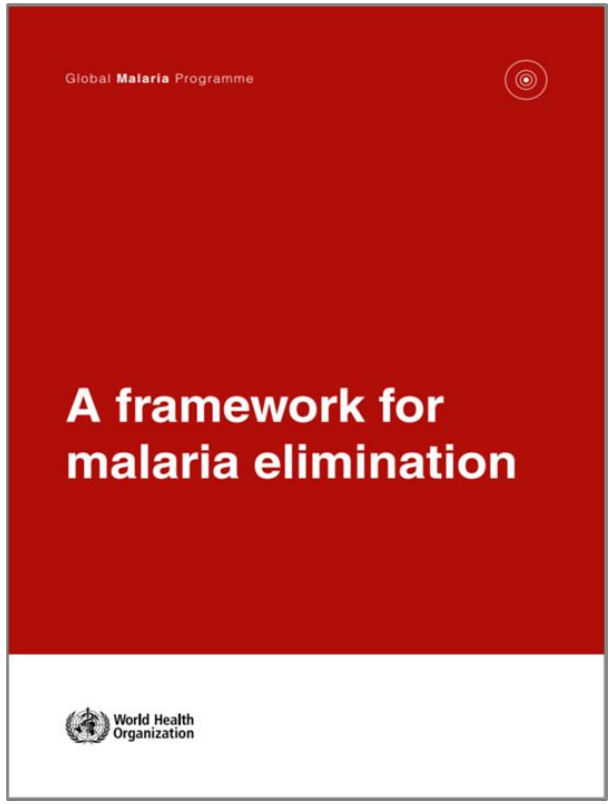


World Health Organization

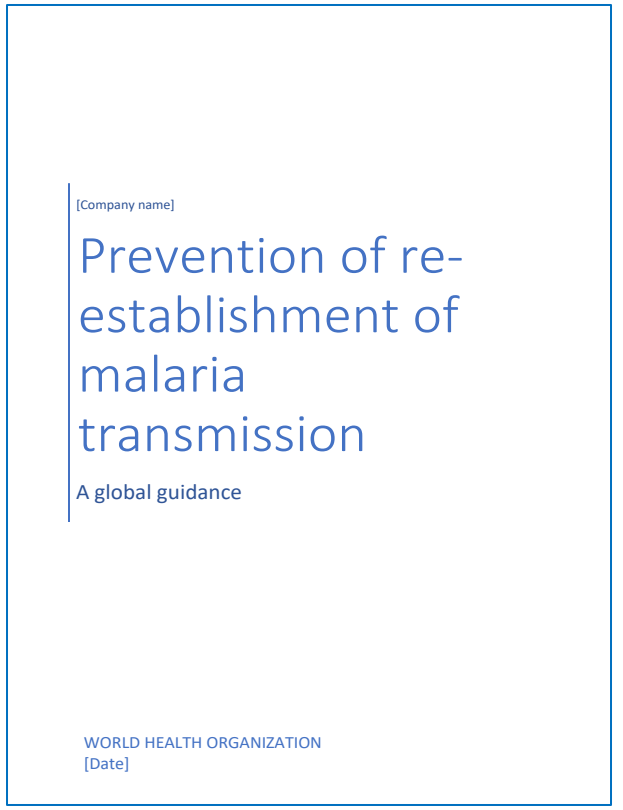
1.3 Guidance, capacity building, best practice

World Health Organization

Guidance



Planned to be published in August 2025



Planned to be publish in April 2025

World Health Organization

Malaria elimination course: WHO Academy, Lyon, France

14 modules

1. The rationale for malaria elimination
2. Principles and goals of malaria elimination
3. Malaria parasite biology, human immunity and epidemiology in areas approaching elimination
4. Malaria case management in areas approaching elimination
5. Vector control and entomological surveillance in areas approaching malaria elimination
6. Surveillance and response in areas approaching malaria elimination
7. Chemoprevention to accelerate malaria elimination
8. Community engagement for malaria elimination
9. Multi-sectoral collaboration and political commitment for malaria elimination
10. Prevention of re-establishment of malaria transmission
11. Stratification to tailor intervention mixes in areas approaching malaria elimination or preventing re-establishment
12. Management and planning of a malaria elimination programme
13. Innovation and research for malaria elimination
14. Certification of malaria elimination

https://www.who.int/about/who-academy

English: 80 enrollments

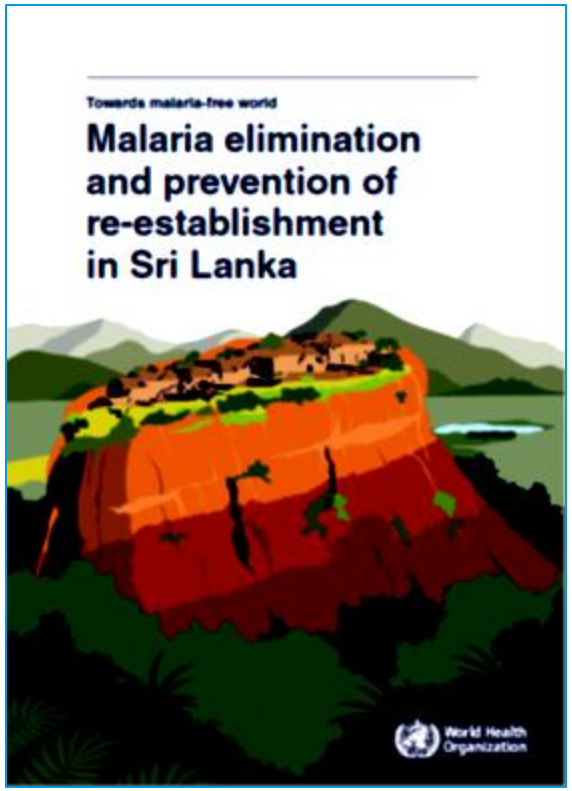
Spanish: 13 enrollments

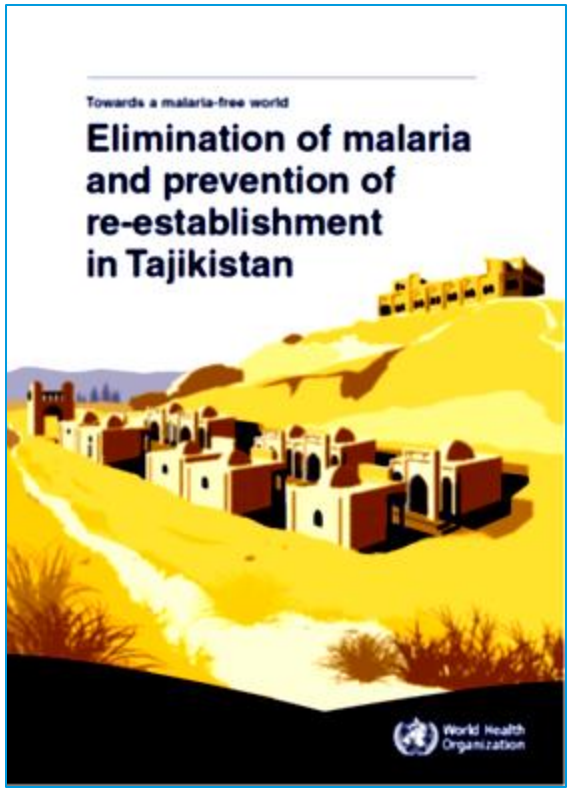
French: 18 enrollments

Arabic: 23 enrollments

World Health Organization

TOWARDS A MALARIA FREE-WORLD series





https://www.who.int/publications/i/item/9789240087026

Lessons learnt

- Strong political commitment supported by human and financial resources
- State-of-the-art case surveillance system prompt treatment
- Entomological surveillance and guided vector control
- Strong collaboration with private sector
- Intersectoral collaborations

World Health Organization

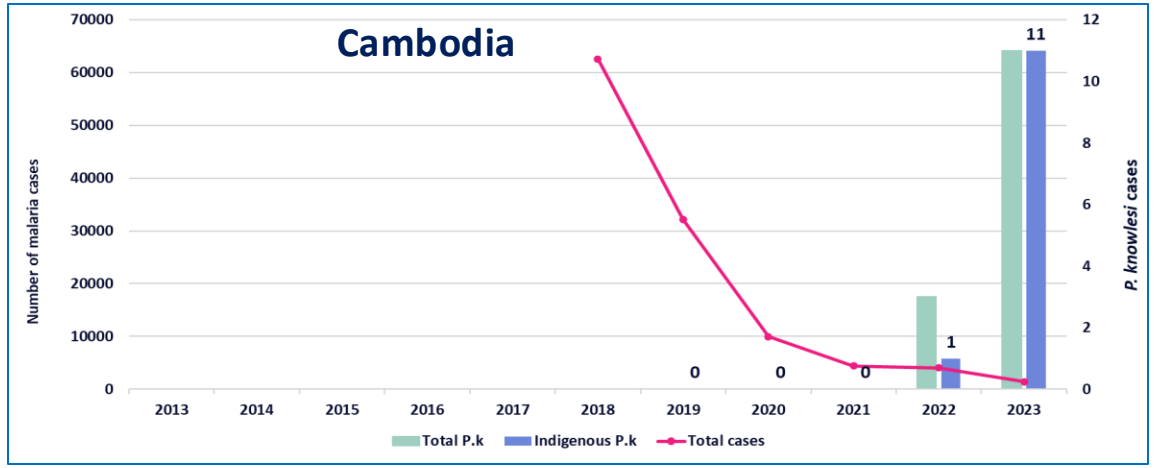
2. Zoonotic malaria

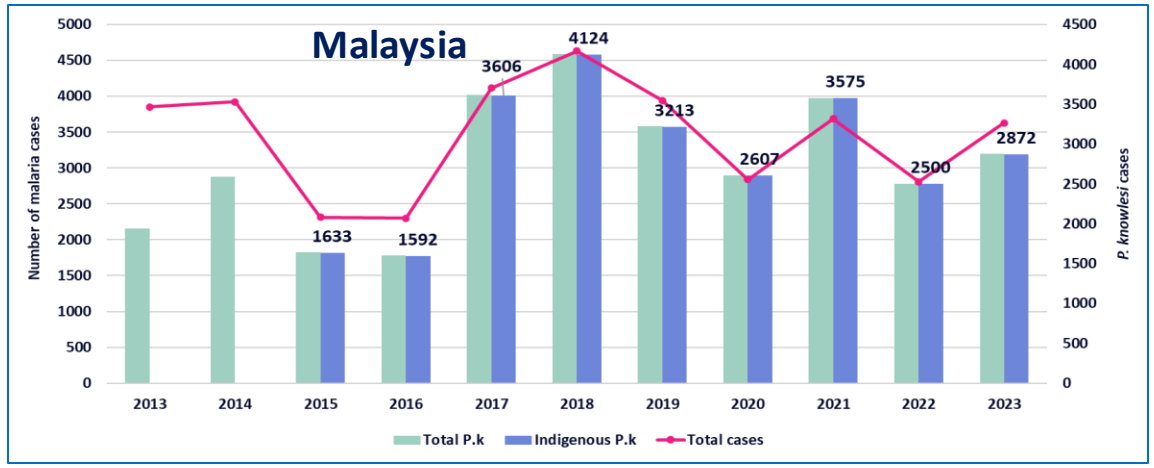
World Health Organization

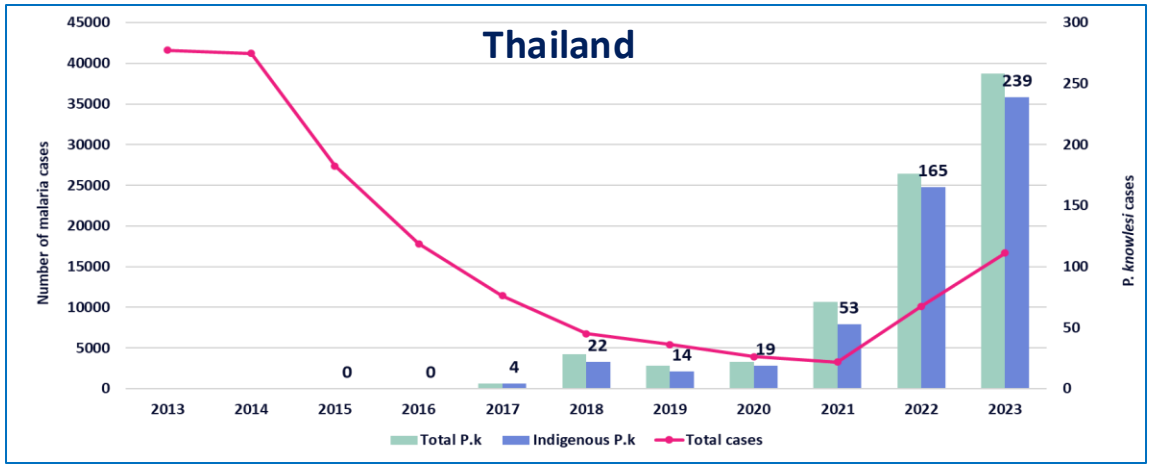
2.1 Situation in affected countries

World Health Organization

P. knowlesi: Reported cases

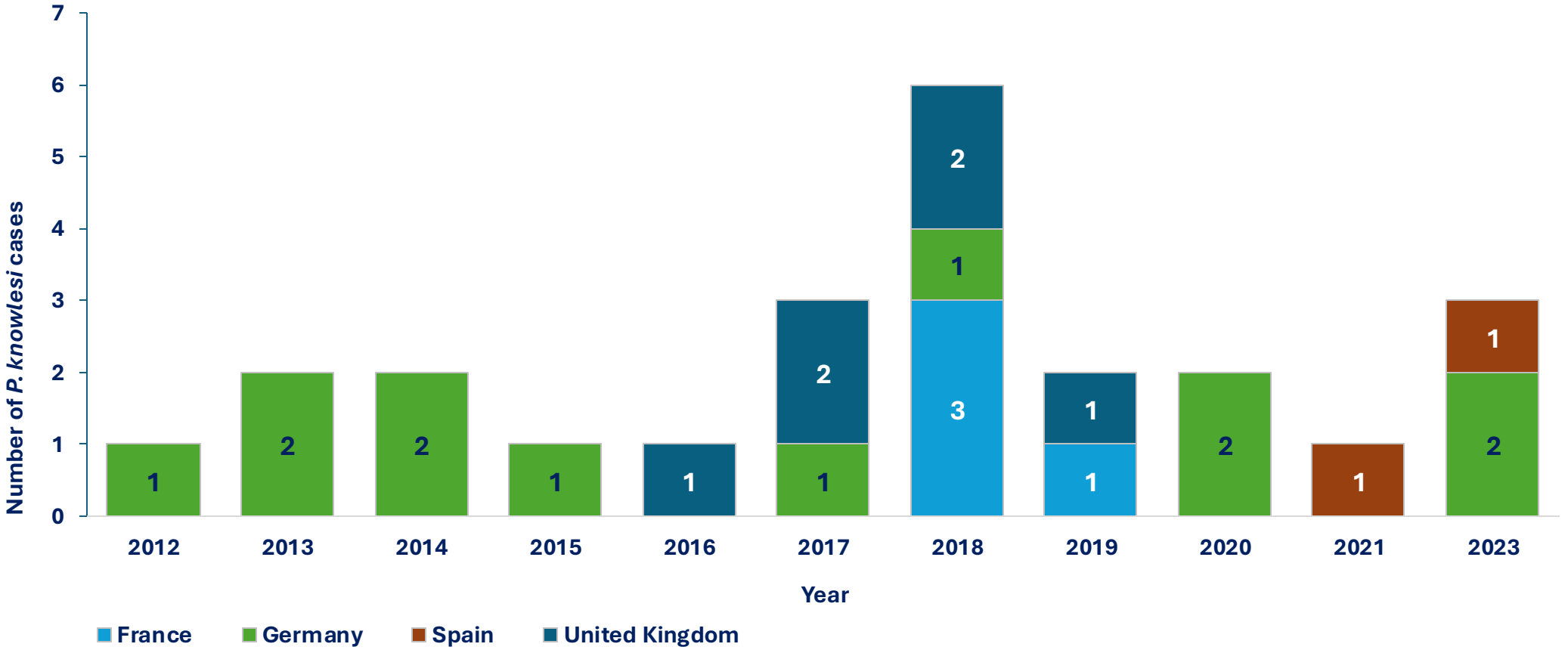






World Health Organization

P. knowlesi cases reported in the EU/EEA, by reporting country, 2012-2023 (n=24)



Source: European Centre for Disease Prevention and Control (ECDC), The European Surveillance System
Note: The UK reported data to ECDC until 2019

World Health Organization

2.2 Update on the Technical consultation on control of zoonotic malaria

World Health Organization

Technical consultation on control of zoonotic malaria, 5-7 Nov 2024: Objectives

1	2	3	4	5
Review the situation with *P. knowlesi* malaria in affected countries and challenges countries are facing to control zoonotic malaria.	Identify practices and interventions applied by countries that have shown to be effective in controlling *P.knowlesi* malaria and rectify them to the extent possible to improve effectiveness.	Define research questions that need to be addressed / answered to develop effective strategies to control zoonotic malaria to achieve the “negligible risk” thresholds and ensure zero death.	Discuss challenges in certifying countries with zoonotic malaria.	Identify the areas where WHO guidance and support are needed.

World Health Organization

Technical consultation on control of zoonotic malaria, 5-7 Nov 2024: Sessions

- **Overview** of the situation with zoonotic malaria
- **Diagnosis and Treatment** of *Plasmodium knowlesi*
- **Zoonotic malaria vectors** and applied **vector control practices**
- **Certification** of malaria elimination in countries with zoonotic malaria
- **Control** of zoonotic malaria and **research** needs

World Health Organization

Technical consultation on control of zoonotic malaria, 5-7 Nov 2024: Conclusions (1)

- Zoonotic malaria poses a complex issue
  - There are **no proven control interventions** for zoonotic malaria.
  - **Lack of a species-specific rapid or point-of-care diagnostic** and requirement of PCR for zoonotic malaria cases confirmation makes it logistically difficult and expensive to estimate the true burden of the disease.
  - Knowledge of the **density, distribution and prevalence of *P. knowlesi* and other zoonotic malaria in NHP reservoirs**, as well as **incriminated vectors**, across Southeast Asia and beyond **is lacking**.
  - It is unclear **how changing levels of human immunity may impact the dynamics of zoonotic malaria**.
- Research priorities identified: **species-specific diagnostics; risk mapping; development of repellents, LSM and outdoor residual spraying, as well as oral baiting and "push and pull" tactics for macaques.**
- **Intersectoral collaboration** as well as engagement with the communities most impacted will be paramount to the successful control.

World Health Organization

Technical consultation on control of zoonotic malaria, 5-7 Nov 2024: Conclusions (2)

- Alternative certification options for countries where the transmission of “human malaria” has ended but zoonotic malaria cases remain were also discussed.
  - A key concern was the potential disincentivization of maintaining efforts to eliminate “human malaria” species in the absence of formal recognition
  - It was suggested to revise the language in key definitions and official texts regarding WHO certification for malaria elimination and to take into account the emergence of zoonotic malaria.

World Health Organization

Technical consultation on control of zoonotic malaria, 5-7 Nov 2024: next steps

- Guidelines Development Group on *P. knowlesi* and minor species testing
- Designing protocols for studies to assess effectiveness of the intervention(s) to control *P. knowlesi* malaria
- TAG-MEC subgroup on *P. knowlesi* will continue its work to finalize deliberations on *P. knowlesi* issues related to certification

World Health Organization

Thank you

World Health Organization

27th meeting of the Malaria Policy Advisory Group
8–10 April 2025, Geneva, Switzerland
Background document for Session 6

Vector control: updates on operational guidance

Background

The need to update contemporary guidance on malaria vector control is critical given the multiplicity of contemporary operational challenges. Biological threats, including insecticide resistance, spread and establishment of invasive species, as well as 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 indoor residual spraying and insecticide-treated nets (ITNs), and new approaches to larval source management have been proposed and developed and requisite guidance promulgated, others 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 (VCAG) and Malaria Policy Advisory Group (MPAG) continue to provide guidance and recommendations on the requisite actions to be undertaken by the World Health Organization (WHO) Global Malaria Programme.

Recent activities since October 2024

Refinement of comparative efficacy process: During several previous MPAG meetings, the desire for evidence-based decision-making on the inclusion of products in an intervention class led to the development of a comparative efficacy protocol (most recently shared with MPAG in October 2024). Given that the experimental hut data that constitute the evidence base for the comparative efficacy assessments are part of the prequalification process, the Global Malaria Programme is ending its requirement for comparative efficacy data in order to enhance efficiency by eliminating duplication with the work of the Prequalification Unit Vector Control Product Assessment Team. Any determination of intervention class will be made at the time of the request to determine the prequalification pathway and/or in consultation with the Guideline Development Group (GDG). This change has been communicated at multiple meetings (UNICEF-UNFPA-WHO meeting in Copenhagen, ITN buyer seller summit, PQ Wednesday Webinar) and through an information note *(1).*

VCAG: The 21st meeting of VCAG was held on 21–25 October 2024. This VCAG meeting had eight applicants presenting on seven intervention classes. Furthermore, a discussion was held to consider the evaluation of genetically modified mosquitoes. VCAG acknowledged the need for alternative evidence, such as that generated through laboratory and confined field trials, as potential substitutes for randomized controlled trials. It should be noted that randomized controlled trials are not a requirement for the establishment of WHO recommendations.

GDG: The GDG met in Geneva on 2–4 December 2024. The primary points of discussion at this meeting were developments related to indoor residual spraying and spatial repellents, and the comparative efficacy changes mentioned above. The updates to the guidelines are ongoing.

Internal and external collaboration of the Vector Control and Resistance Unit: In addition to activities specific to vector control and resistance, the Vector Control and Resistance Unit collaborated with other Global Malaria Programme units to ensure comprehensive support for activities, including the technical consultation on control of zoonotic malaria (5–7 November 2024), WHO technical consultation on malaria multi-model comparison of priority interventions (16–18 December 2024), and revision of the entomological surveillance and vector control monitoring chapter of *Malaria surveillance, monitoring and evaluation: a reference manual (2)*. In addition, the Vector Control and Resistance Unit collaborated externally with WHO regional offices and partners on the following: quarterly calls with partners regarding *Anopheles stephensi*; participation in the Horn of Africa Network for Monitoring Antimalarial Treatment (HANMAT) meeting in Djibouti in December 2024 to address biological threats to case management and vector control; support for the vector control component of the rapid malaria epidemic assessment in Ethiopia in 2024; and support for entomological surveillance and integrated vector management for malaria elimination efforts in Cabo Verde in 2024.

Looking forward: upcoming priorities

Larval source management operational manual: The update to the 2013 larval source management operational manual *(3)* will be published in Q2 2025. The update will include an increased emphasis on the integration of larval control of malaria and arbovirus vectors. In addition, there will be an enhanced discussion on the use of technology, such as drones, artificial intelligence and remote sensing, for detection and treatment of larval sites. The update will also include recommendations for exceptional settings and circumstances.

Guidelines for malaria: The GDG will meet in 2025 to discuss further updates to the consolidated *WHO guidelines for malaria (4)*. Areas of possible discussion include further consideration of consolidated ITN recommendations, particularly in light of the additional insecticides and configurations of ITNs that are being developed. To keep guidelines as up-to-date as possible, without periodic (and costly) systematic reviews, a "living guideline" approach is being considered for some vector control tools.

VCAG: VCAG, coordinated by the WHO Global Malaria Programme, Global Neglected Tropical Diseases Programme and Department of Regulation and Prequalification, has been meeting biannually for over 10 years, supporting the assessment of products across malaria, dengue and other arboviruses, leishmaniasis and tick-borne diseases. VCAG serves as a forum to help determine when the efforts to initiate a systematic review may be warranted. While VCAG's assessment of public health value does not have a direct impact on the outcomes of the guideline development process, deviation of VCAG conclusions from those of the GDG has created confusion and drawn external critique. As VCAG is a valuable entity across various diseases and departments, it is imperative to make it more functional by revisiting procedural aspects, for example by strengthening the terms of reference to address the needs of all parties with vested interests, and consolidating collaboration and responsibility sharing among departments. Accordingly, the WHO publication *Norms, standards and processes underpinning development of WHO recommendations on vector control (5)* will be updated. The next VCAG meeting will be held in November 2025. A spring VCAG meeting was not scheduled, after communication with applicants indicated that a meeting in later 2025 would be better.

Vector control support to the WHO African Region: Vector-borne diseases, including malaria and arboviral diseases, are presenting an increasing challenge in the African Region. Yet, there are limited

financial and technical resources to respond effectively through improved entomological surveillance, technical support, insecticide resistance monitoring and management, capacity-building, epidemic preparedness and response, operational research and vector control implementation. More effective collaboration is needed between scientists, technical agencies, implementors and regional networks to address this challenge. Such collaboration will provide effective support in conducting vector control needs assessments, developing insecticide resistance management plans and operationalizing frameworks for integrated vector management in the context of the *Global vector control response 2017–2030 (6)*.

Optimizing vector control efforts: Resource constraints have necessitated effective allocation of funding. WHO has provided guidance to support countries in identifying the appropriate mix of interventions within resource-constrained environments, such as the *Guiding principles for prioritizing malaria interventions in resource-constrained country contexts to achieve maximum impact (7*) and the upcoming manual on the subnational tailoring of interventions. Such approaches to maximize impact are even more important with the recent reductions in funding. These efforts should also involve identifying more efficient, effective and equitable means of implementing vector control. The Vector Control and Resistance Unit will update the *Global plan for insecticide resistance management in malaria vectors (8)* and undertake a technical consultation on assessment of vector behavioural adaptation. Quarterly calls for *An. stephensi* updates will be expanded to include other threats, and a strategy for eliminating *An. stephensi* in Africa will be developed. Collaboration with pertinent partners on innovative tools, such as genetically modified mosquitoes, endectocides and eave tubes, will be strengthened. The Vector Control and Resistance Unit will also revise the vector control needs assessment tool and create an online platform, develop an operational framework for integrated vector management/global vector control response, update training manuals for integrated vector management and revive regional integrated vector management trainings. Multisectoral response will be increased, with consideration of a declaration on the global vector control response to make intersectoral collaboration more robust in the context of the One Health approach.

References[1]

1. Assessing new malaria vector control products [website]. World Health Organization; 19 December 2024 (https://www.who.int/groups/vector-control-advisory-group/assessing-new-malaria-vector-control-products).
2. Malaria surveillance, monitoring and evaluation: a reference manual. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/272284).
3. Larval source management: a supplementary malaria vector control measure: an operational manual. Geneva: World Health Organization; 2013 (https://iris.who.int/handle/10665/85379).
4. WHO guidelines for malaria – 30 November 2024. Geneva: World Health Organization; 2024 (https://app.magicapp.org/summary/guideline_8100.html).
5. Norms, standards and processes underpinning development of WHO recommendations on vector control. Geneva: World Health Organization; 2020 (https://iris.who.int/handle/10665/338030).

[1] All references were accessed on 26 March 2025.

6. 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).

7. Guiding principles for prioritizing malaria interventions in resource-constrained country contexts to achieve maximum impact. Geneva: World Health Organization; 2024 (https://doi.org/10.2471/B09044).

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

Vector control and insecticide resistance

Vector Control: Updates on Operational Guidance

Emmanuel Chanda

World Health Organization

Outline of The Presentation

Recent Activities since October 2024

Looking forward: Upcoming Priorities

Optimizing Vector Control efforts

World Health Organization

Recent Activities since October 2024

World Health Organization

Refinement of comparative efficacy process

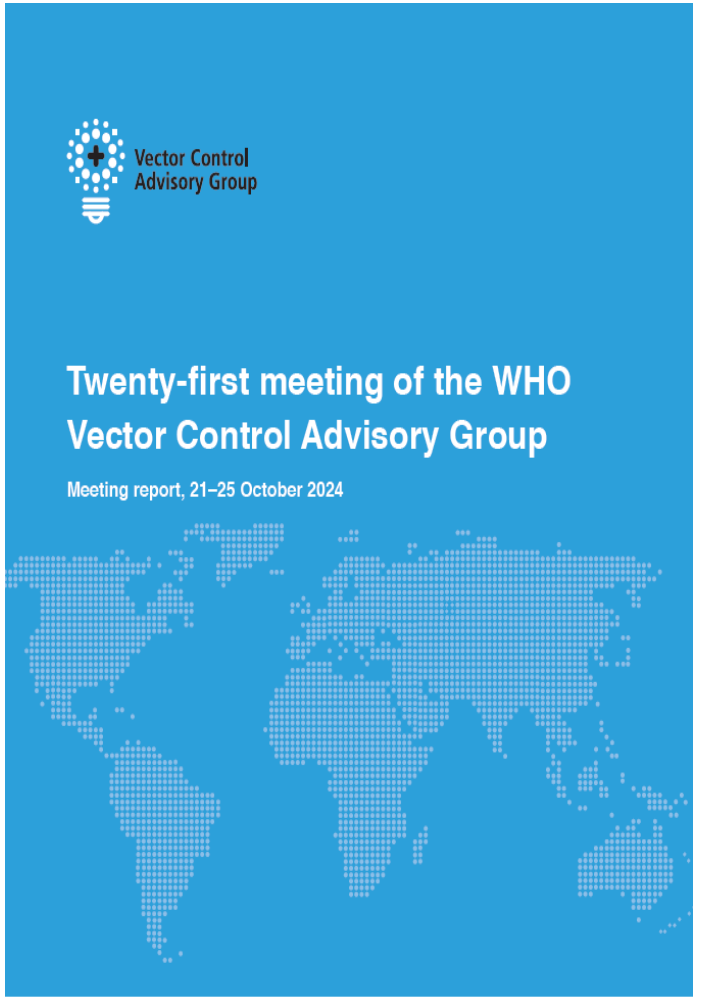
- During several previous MPAG meetings, the desire for evidence-based decision-making on the inclusion of products in an intervention class led to the development of a comparative efficacy protocol (most recently shared with MPAG in October 2024).
- Given that the experimental hut data that constitute the evidence base for the comparative efficacy assessments are part of the prequalification process, the Global Malaria Programme has ended its requirement for comparative efficacy data in order to enhance efficiency by eliminating duplication with the PQT Vector Control Product Assessment Team.
- Any determination of intervention class will be made at the time of the request for determination of pathway in consultation with the Guideline Development Group (GDG), if necessary.
- This change has been communicated at multiple meetings (UNICEF-UNFPA-WHO meeting in Copenhagen, ITN buyer seller summit, PQ Wednesday Webinar, (Information note)

World Health Organization

The 21st meeting of the VCAG; 21-25 October 2024.

- This VCAG meeting was one of the largest, assessed 8 applications from 7 intervention classes.
- The meeting discussed the need to consider evaluation of genetically modified mosquitoes.
- VCAG acknowledged the need for potential substitute approaches different to randomized controlled trials (RCTs), such as those generating evidence through laboratory and confined field trials, to demonstrate public health value.
- It should be noted that RCTs are not a requirement for the establishment of WHO recommendations.

- systemic endectocide treatment;
- reduction of pathogen transmission induced by gene drive;
- topical repellents;
- spatial repellents;
- sterilization of male mosquitoes;
- bait stations
- Eave tubes.



World Health Organization

The GDG Meeting, 2-4 December 2024

- The Guidelines Development Group (GDG) met in Geneva, 2-4 December 2024.
- The primary points of discussion for this meeting were developments related to:
  - indoor residual spraying,
  - spatial repellents, and
  - comparative efficacy data requirements changes.
- The guidelines updates are ongoing.

World Health Organization

Internal and External Collaboration of the VCR

- Internal Collaboration within GMP:
  - Technical consultation on control of zoonotic malaria (5-7 November 2024),
  - Technical Consultation on Malaria Multi-Model Comparison of Priority Interventions (16-18 December 2024),
  - Revision of Entomological surveillance and vector control monitoring chapter of the Malaria Surveillance, Monitoring & Evaluation manual.
- External Collaboration with Regional Offices:
  - Quarterly calls were conducted except for the one in Q4 2024
  - HANMAT (Horn of Africa countries in EMR and AFR) meeting in Djibouti (December 2024) to address biological threats (case management, vector control)

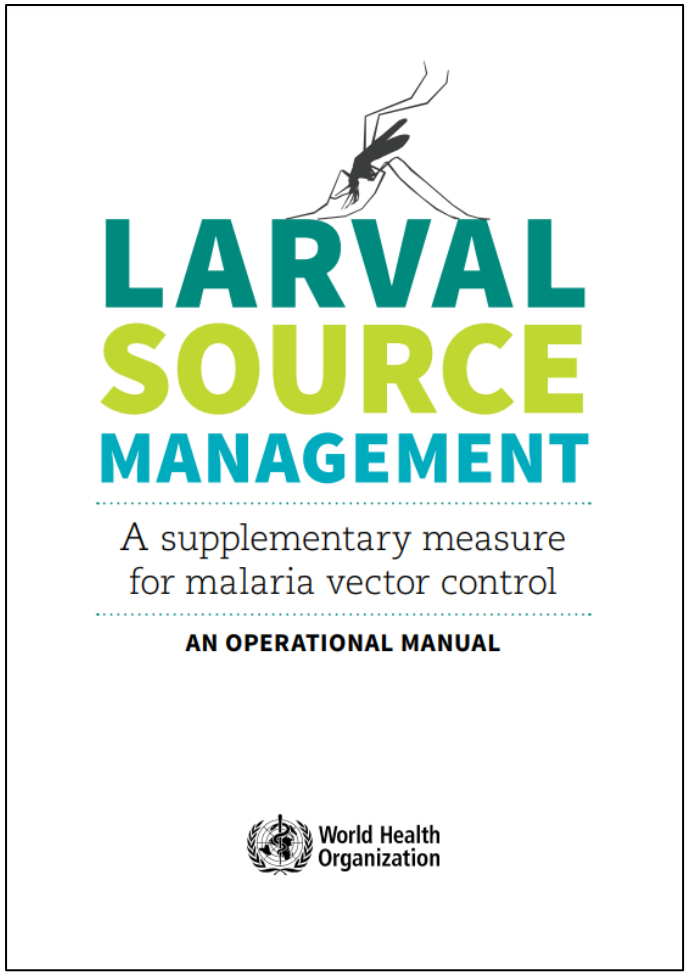
World Health Organization

Looking forward: Upcoming Priorities

World Health Organization

LSM operational manual

- The update to the 2013 Larval Source Management operational manual will be published in Q2 2025.
- The update will include an increased emphasis on the integration of larval control of malaria and arbovirus vectors.
- Additionally, there will be an enhanced discussion on the use of technology for detection and treatment of larval sites, such as:
  - drones,
  - artificial intelligence, and
  - remote sensing.



- Increased focus on control of malaria and arbovirus vectors
- Enhanced discussion on the use of technology (for larval site detection and treatment)
- Recommendations for exceptional settings and circumstances

World Health Organization

The GDG Meeting in 2025

- The GDG will meet in 2025 to discuss further updates to the Consolidated guidelines for malaria.
- Possible topics of focus include;
  - consolidated ITN recommendations, particularly in the light of additional insecticides and configurations of ITNs that are being developed.
  - Consideration of the division between interventions for wide-scale deployment and supplementary interventions,
  - endectocides, and
  - Review of potential substitute approaches different to randomized controlled trials (RCTs) to demonstrate public health value of vector control tools
- To keep guidelines as up-to-date as possible, without periodic (and costly) systematic reviews, a “living guideline” approach is being considered for ITNs.

World Health Organization

The VCAG meeting in November 2025

- VCAG coordinated by GMP, NTD and PQT, has been meeting biannually in more than 10 years, supporting assessment of products across malaria, dengue and other arboviruses, leishmaniasis and tick-borne diseases.
- VCAG serves as a forum to help determine when the efforts to initiate a systematic review may be warranted.
- While VCAG's assessment of public health value does not have direct impact on the outcomes of the guideline development process, differences between VCAG conclusions and those of the GDG has created confusion and drawn external critique.
- As VCAG is valuable across various diseases and departments, efforts are underway to make it more functional by revisiting procedures to improve efficiencies and responsiveness to the need, refining TORs to address the needs of all parties with vested interests, clarifying roles and responsibilities among relevant departments to consolidate collaboration.
- Accordingly, the Norms, standards and processes document underpinning development of WHO recommendations on vector control will be updated in 2025.
- The next VCAG meeting will be held 3 - 4 November 2025.
- A spring VCAG meeting was not scheduled, after communication with applicants indicated that a meeting in later 2025 would be better.

World Health Organization

Monitoring, management and control of biological and other threats

- Multi-centre study to define discriminating doses for broflanilide and isocycloseram
- Working with VCRU/USM to develop WHO bottle bioassay & procurement
- Provide support for the development and implementation of Insecticide Resistance Management plans
- The Global plan for insecticide resistance monitoring and management in malaria vectors will be updated
- Quarterly calls for *An. stephensi* updates, will be expanded to also include other threats
- Development of a strategy for eliminating *An. stephensi* in Africa
- Technical consultation on ITN durability and procurement
- Technical consultation on vector behaviour adaptation

World Health Organization

Other Planned Activities

- Support evolution and expansion of MINT tool to support prioritization of vector control tools
- Updating and providing quality control for the Malaria Threats Map
- To provide support for conducting insecticide susceptibility testing of malaria vectors
- Quarterly calls with WHO regions on GVCR implementation

World Health Organization

Vector Control Support to WHO-AFRO

- The AFRO region is experiencing a growing challenge of Vector borne diseases including malaria and arboviral diseases.
- Yet there are limited financial and technical resources to respond effectively to improve surveillance, technical support, and Vector control implementation.
- The solution would be more effective collaboration between scientists, technical agencies, implementors and regional networks.
- This will lead to effective support for vector control:
    - conducting Vector Control Needs Assessments (VCNAs),
    - developing Insecticide Resistance Management (IRM) plans and
    - operationalizing frameworks for Integrated vector management (IVM) in the context of the Global Vector Control Response (GVCR).

Strengthening support to the ANVR to provide TA on:

- Ento surveillance
- IR monitoring & Mngt
- Capacity building
- Epidemic preparedness and response
- Operational Research
- Vector control implementation

Support implementation of the GVCR

World Health Organization

Optimizing Vector Control efforts

World Health Organization

Optimizing vector control efforts

- Resource constraints have necessitated effective allocation of funding.
- WHO provides guidance on principles for prioritization and sub national tailoring to support countries in identifying appropriate mix of interventions, within resource constrained environments.
- This is even more important with recent reductions in funding.
- This should be accompanied by identification of more efficient, effective and equitable means of implementing vector control.
- Increasing surveillance, targeting of interventions, and multi-sectoral response will be critical.

- Updating of the GPIRM.
- Vector behaviour changes
- VCNA revision with online platform
- Operational Framework for IVM/GVCR
- Updating training Manuals for IVM
- Reviving Regional IVM trainings
- Declaration for the GVCR
- One Health Approach

World Health Organization

Thank you

For more information, please contact:
Emmanuel Chanda
Unit Head, Vector Control & Insecticide Resistance
chandae@who.int

World Health Organization

Update on malaria drug resistance in Africa

Malaria Policy Advisory Group
April 2025

Charlotte Rasmussen
Diagnosis, Medicine and Resistance
Global Malaria Programme

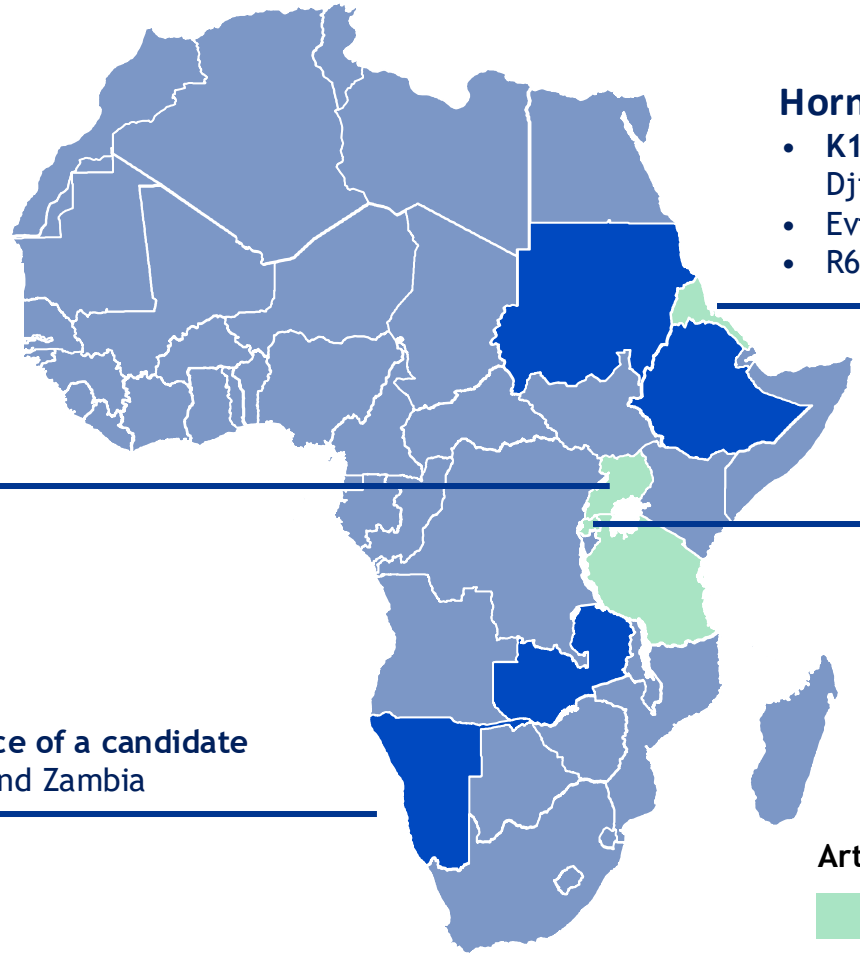
World Health Organization

Presentation outline

- Updates on the status of drug resistance
- WHO activities related to antimalarial drug resistance
- Potential impact of the changing funding landscape on antimalarial drug resistance

World Health Organization

Drug resistance | Artemisinin partial resistance emerging and spreading



Horn of Africa

- **K13 mutation R622I** detected in several countries including Djibouti, Eritrea, Ethiopia, Sudan and Somalia
- Evidence of slow parasite clearance in Eritrea
- R622I has been detected in parasites *with Pfhrp2/3* deletions

Uganda

- **Different K13 mutations are spreading** with foci where parasites carry validated artemisinin resistance markers

Rwanda & Tanzania

- **K13 mutations, predominately R561H,** have been found at high prevalence in studies with evidence of delayed clearance in Rwanda and Tanzania

Southern Africa

- 2023 survey found **high prevalence of a candidate K13 marker (P441L)** in Namibia and Zambia

Artemisinin partial resistance:

Confirmed

(Evidence of delayed clearance in patients with validated markers)

Suspected

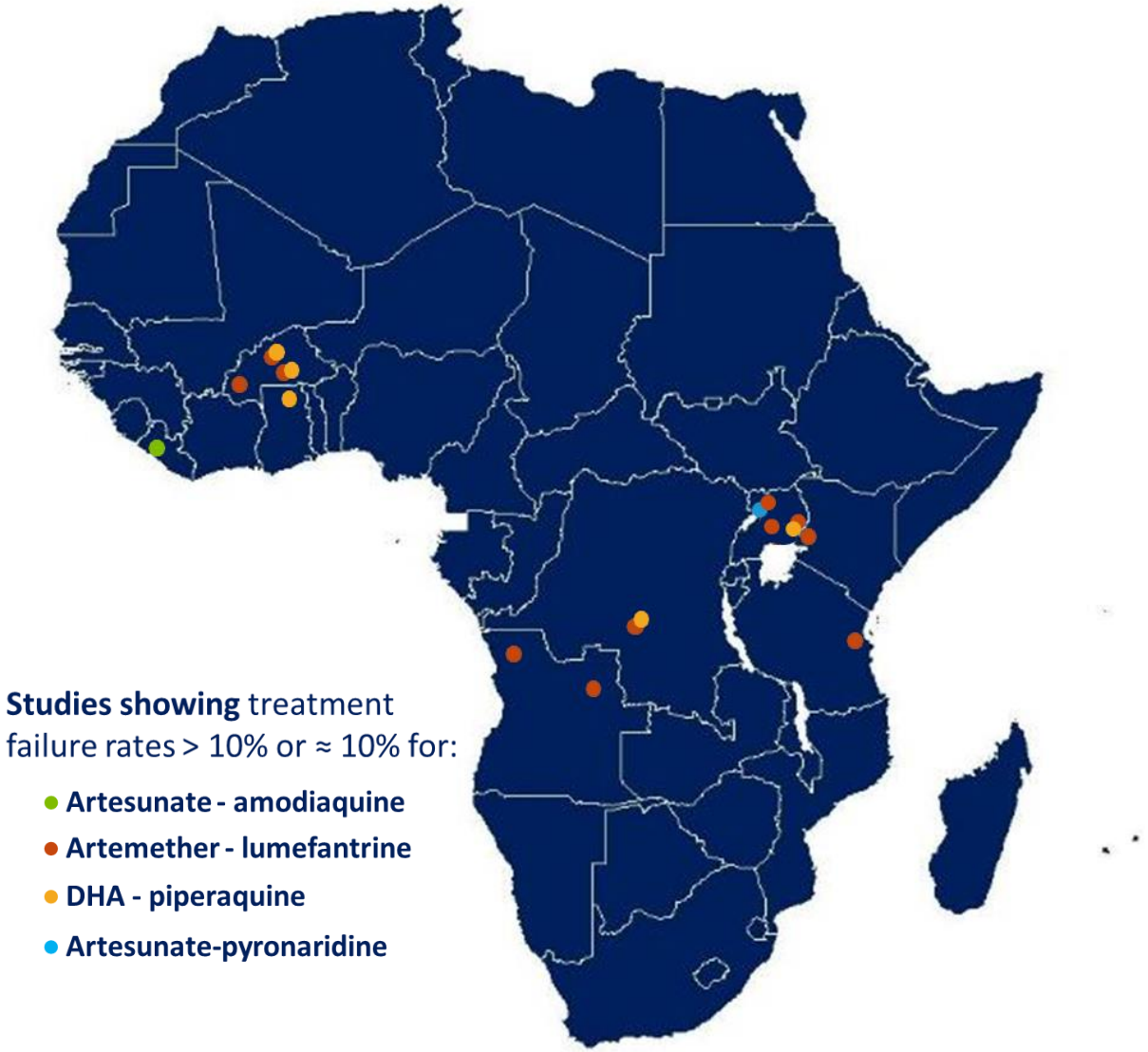
(Evidence of delayed clearance or >5% with validated or candidate markers)

World Health Organization

Gaps in information impede effective responses to resistance

- ACT partner drug resistance would result in high treatment failure rates
- Scattered reports of high treatment failure
- Identifying true decline in efficacy in the data is challenged by:
  - Molecular markers for resistance are missing for key ACT partner drugs.
  - Difficulties in distinguishing recrudescence from reinfection
  - Challenge related to adherence to standard TES protocol and quality of implementation
- Areas with no or limited data either due to no studies being done, or data not analyzed and shared.

TES with high failure rates from 2015 - 2024



Lumefantrine resistance? What is the evidence

Evidence	Unresolved questions and limitations in evidence
Data from efficacy studies:	
➢ **AL treatment failure rates of >10% have been reported in several countries** (including Angola, Burkina Faso, DR Congo, Kenya, Tanzania, Uganda)	➢ **Deviations from recommended protocol** ➢ **Deviation in molecular correction methods** ➢ Studies reporting **high failure rates of more than one ACT**.
Failures in returning travellers:	
➢ **AL failures reported for instance in travellers** returning from: ▪ Angola[1], Liberia[1], and Uganda[1,2] to the UK; ▪ Ghana, Gambia, Tanzania and SE Asia to Sweden[3]; and ▪ the Republic of Congo, Kenya, Malawi, and Zimbabwe to Prague[4]	➢ Patients are often **not receiving observed treatment**, and **lumefantrine blood levels not measured**
In-vitro and ex-vivo data:	
➢ **Decreased susceptibility to lumefantrine reported**: ▪ From Uganda[5]: lumefantrine IC_{50}* median 14.6 nM in northern Uganda vs. 6.9 nM in eastern Uganda ▪ Two cases to the UK from Uganda[2] with EC_{50} > 250 nM	➢ **No IC_{50} threshold** defined as lumefantrine resistance ➢ Uncertainty about the **meaning of outliers** ➢ In UK, **parasites were collected after treatment**. In-patient selection may have taken place

[1] Sutherland CJ et al. (2017) doi: 10.1128/AAC.02382-16
[2] van Schalkwyk et al. (2024) doi.org/10.1093/cid/ciad724
[3] Sonden et al. (2017) doi: 10.1093/cid/ciw710
[4] Grebenyuk et al. (2023) doi: 10.1016/j.tmaid.2023.102549
[5] *Tumwebaze, et al. (2022). https://doi.org/10.1038/s41467-022-33873-x*

IC_{50} : Concentration required to inhibit 50% of the growth

Presentation outline

- Updates on the status of resistance
- WHO activities related to antimalarial drug resistance
- Potential impact of the changing funding landscape on antimalarial drug resistance

World Health Organization

Activities in the areas of **molecular marker surveillance**

Compendium development

Create a compendium of molecular markers to support drug resistance surveillance

Facilitate Research

Convening of researchers to help accelerate the identification of new markers of resistance

External Quality Assurance (EQA)

Establish an EQA scheme to support the generation of quality data for molecular markers

Support for TES sample analysis

Facilitate and provide support for molecular analysis of samples from TES

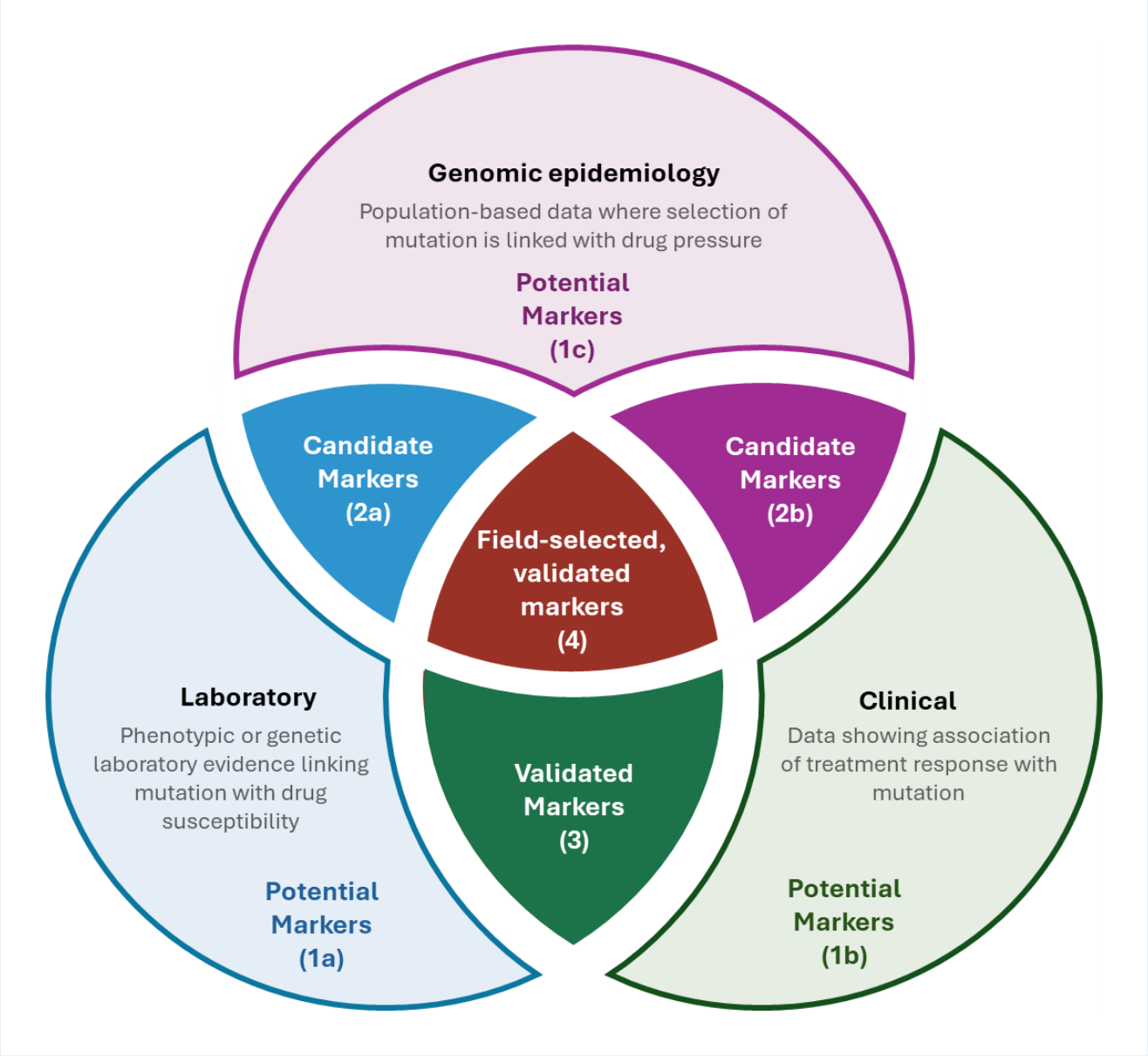
World Health Organization

Marker compendium development

- Objective of compendium: To facilitate prioritisation of molecular marker surveillance and research by systematically categorizing drug resistance markers based on the strength of evidence
- A first meeting organized on 27 March on the development of a compendium of markers of antimalarial drug resistance
- General agreement on an overall framework for classifying drug resistance markers

World Health Organization

Draft framework for classifying markers of antimalarial drug resistance



Activities related to **guidance on antimalarial drug efficacy surveillance**

Review thresholds and definitions

Evaluation and potential revision of definitions and thresholds for artemisinin partial resistance

Update efficacy surveillance guidance

Update guidance related to surveillance of antimalarial drug efficacy

Recrudescence vs Reinfection

Review method for distinguishing recrudescence and reinfection

World Health Organization

Review thresholds and definitions

- Virtual technical consultation on 23 October 2024
- Review existing thresholds and definitions of:
  - Validated and candidate markers of artemisinin partial resistance
  - Areas of suspected and confirmed artemisinin partial resistance
- Definition and thresholds established by expert groups in 2013 and 2015 based on data from Asia

World Health Organization

Conclusions

Markers of artemisinin partial resistance

- Markers defined based on data on:
  - Delayed clearance (a parasite clearance half-life of ≥5 hours or persistent parasitemia at 72±2 hours)
  - Ring-stage survival assay ($RSA_{0–3}h$)
- The group noted that the African data available to date suggest faster clearance times compared to Asia.
- The $RSA_{0–3}h$ cutoff (>1% survival) is likely too low, as it is too close to background values in these assays.

The consensus was to **maintain the current definitions of validated and candidate *K13* markers** of artemisinin partial resistance and to reconvene to review new data and determine whether revised definitions are needed.

Definition of areas with suspected artemisinin resistance

The definition of suspected artemisinin resistance in an area was reviewed, allowing for the classification of an area as having **suspected artemisinin partial resistance if ≥5% of patients carry K13 resistance-candidate or validated mutations.**

Activities to **improve reliability, quality and availability of TES data**

Consultant roster for TES support

Roster of consultants established to support quality TES through protocol review, training and site visits

Tools and resources for efficacy surveillance

Inclusion of additional tools and resources in the surveillance guidance

Online training

Plans for online training for TES implementers based on revised guidance

Malaria Threat Maps

Results from TES and molecular data collated and made available through the Malaria Threat Maps

World Health Organization

Presentation outline

- Updates on the status of resistance
- WHO activities
- Potential impact of the changing funding landscape on antimalarial drug resistance

World Health Organization

Impact of the decrease in USG funding for malaria

Programmatic threats

Consequences

Reduction of vector control activities → Increase cases and malaria epidemics

Reduction in chemoprevention → Increase patient load in health facilities

Interruption of RDT supplies → Increased ACT consumption in public health facilities

Interruption of ACT supplies →

Increased treatment seeking towards the private sector

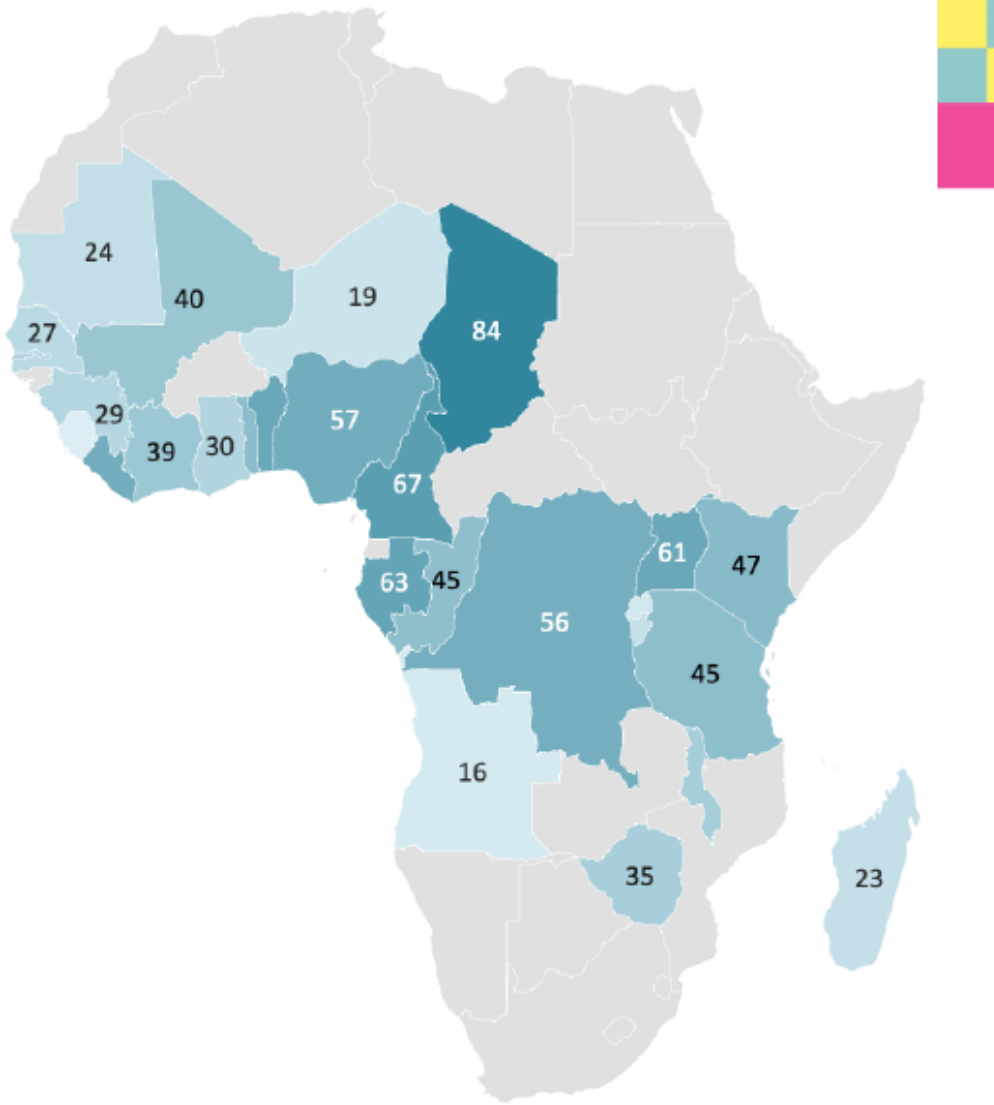
- High levels of malaria presumptive treatment
- Subtherapeutic exposure to antimalarial medicines
- Irrational use of artemisinin-based injections

Increased risk of resistance emerging and spreading

Interruption of support for TES → Decreased ability of detect decline in efficacy

PRIVATE SECTOR IS KEY FOR MALARIA CASE MANAGEMENT IN SUB-SAHARAN AFRICA

- The private sector is the first point of call for many in sub-Saharan Africa – large % of care-seeking for children under 5 with a fever in private facilities, outlets, shops and other non-public sources
- Progress towards malaria control and elimination (as well as prevention and response to antimalarial drug resistance) will lag if private sector engagement is not prioritized, particularly in high burden settings with high rates of private sector treatment seeking
- Accessing good quality, timely private sector data is one of the biggest challenges to effective policy development and implementation

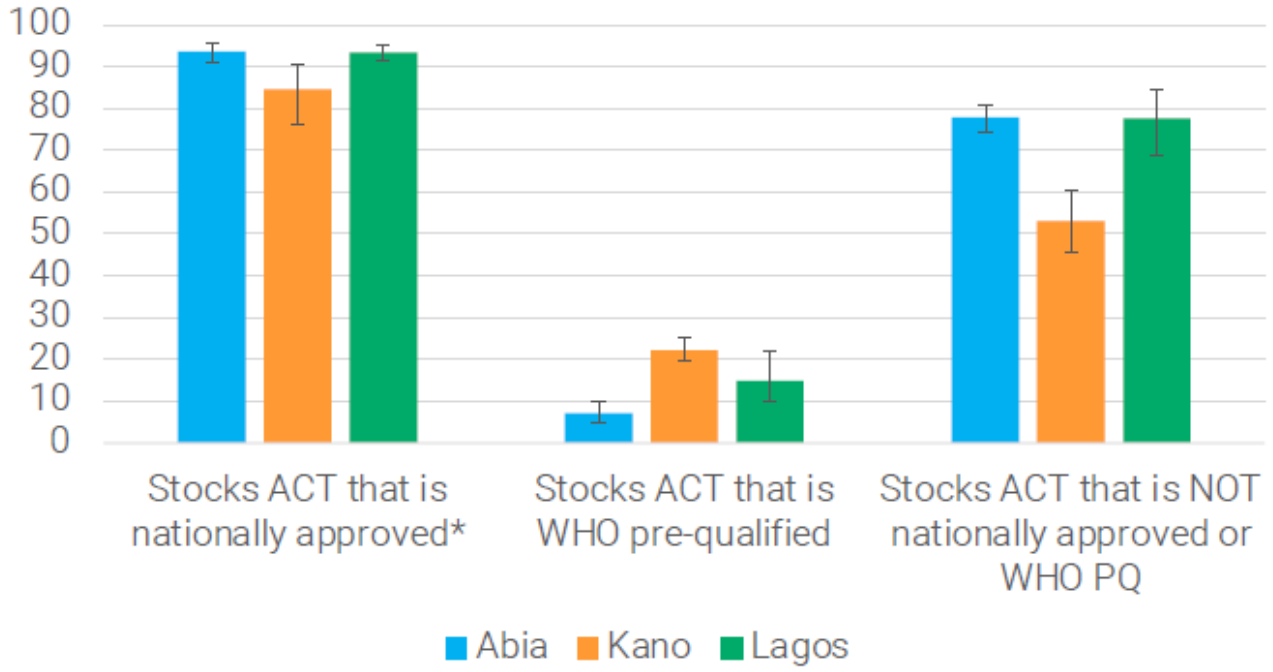


Source: ACTwatchlite psi psi Nigeria NATIONAL MALARIA ELIMINATION PROGRAMME Federal Ministry of Health, Abuja

Source: ICF, 2015 The DHS Program STATcompiler. Funded by USAID. http://www.statcompiler.com. January 29 2025; using the most recent DHS/MIS data for each country (year range: 2011 to 2023)

AVAILABILITY OF PQ/REGISTERED ACTS

Proportion of antimalarial-stocking outlets with nationally approved and WHO pre-qualified ACTs in stock on the day of visit, overall for each state



Source: ACTwatchlite psi psi Nigeria NATIONAL MALARIA ELIMINATION PROGRAMME Federal Ministry of Health, Abuja

Total antimalarial stocking outlets: Abia=1408 Kano=1543 Lagos=916

Important definitions/ limitations:

*Nationally approved ACTs are defined here as those that (1) were included in the database of known antimalarials from the **incomplete** version of the NAFDAC Greenbook available online and had a NAFDAC code or (2) were found during fieldwork and added to the database of known antimalarial products using the information and NAFDAC code on the product packaging. This is not an official designation of nationally approved products, which would require a complete Greenbook with NAFDAC codes for all approved products to be publicly available or shared with the research team

*WHO pre-qualified are those products that have received WHO prequalification.

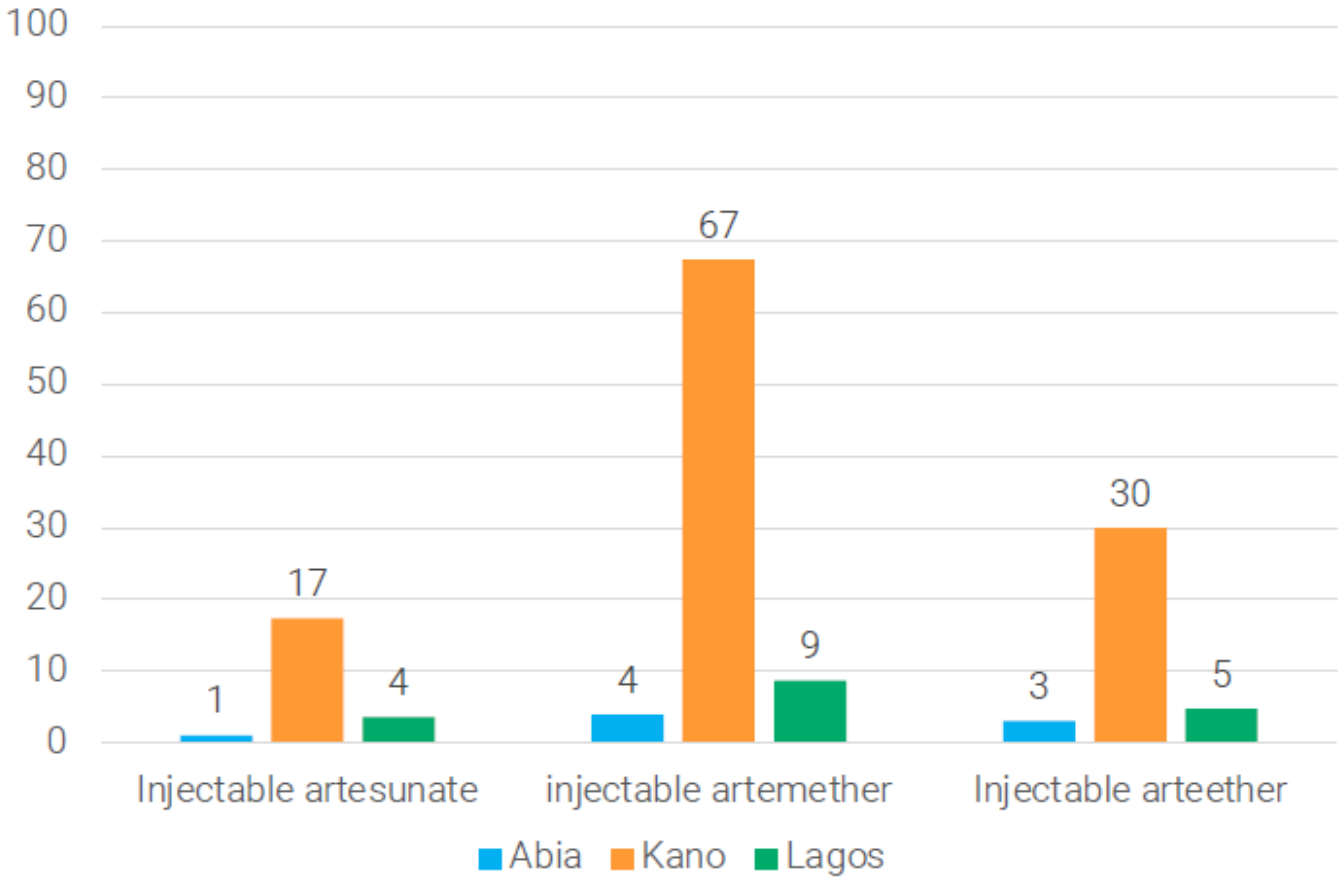
In all three states, over 80% of antimalarial stocking private sector outlets had at least one nationally approved ACT in stock on the day of the survey.

Rates of QA ACT availability were lower, ranging from 7% in Abia to 22% in Kano.

A majority of outlets had ACTs that were neither nationally approved, nor WHO prequalified in stock, ranging from 53% in Kano to 78% in Lagos.

AVAILABILITY OF INJECTABLE ARTEMISININS

Source: ACTwatchlite



No oral artemisinin monotherapies or rectal artesunate was found in the 3 states.

Injectable artemisinins were found in a large proportion of private sector antimalarial-stocking outlets in Kano, most commonly artemether

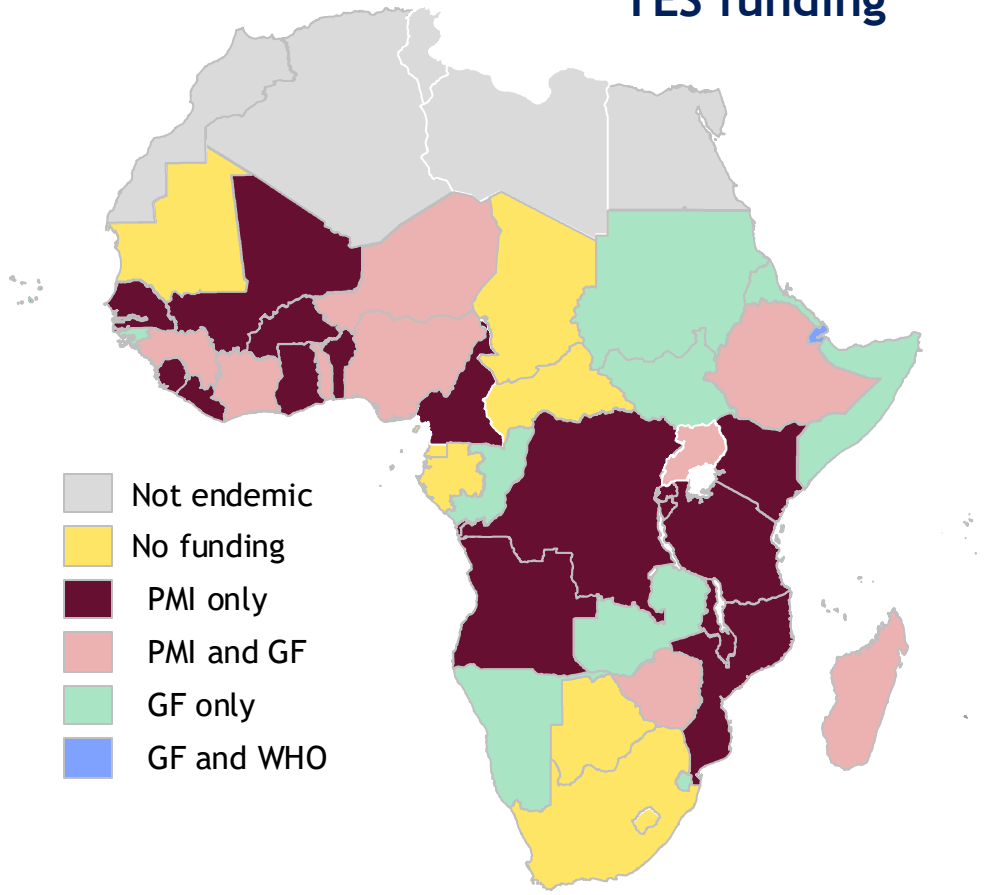
Availability of these products was lower in Abia and Lagos

Total antimalarial stocking outlets: Abia=1408 Kano=1543 Lagos=916

Critical gaps in data needed to guide treatment policy

- TES remains essential for guiding treatment policy
- Significant coverage gaps existed even before 2025 both due to funding, quality, and data sharing issues
- Current challenges:
  - **Expected drastic reduction in TES funding**
  - **PMI has been key in providing technical support for TES in PMI-supported countries**
  - **PMI/US CDC has also supported molecular analysis through PARMA (Partnership for Antimalarial Resistance Monitoring in Africa)**

TES funding



BCG mapping

World Health Organization

Thank you

World Health Organization

27th meeting of the Malaria Policy Advisory Group
8–10 April 2025, Geneva, Switzerland
Background document for Session 7

World Health Organization

Global consultation on coordination of antimalarial drug resistance surveillance and response efforts in Africa

Document provided by the RBM Partnership To End Malaria

Global Consultation on Coordination of Antimalarial Drug Resistance Surveillance and Response Efforts in Africa

Pre-consultations held in February 2025

In-person meeting held on 12-13 March 2025, Global Health Campus, Geneva, Switzerland

*Circulated pre-reads and key outcomes available on the **LINK***
*Meeting agenda available in **Annex I***
*Attendance list available in **Annex II***

A. Context and purpose of this document

The "Big Push Against Malaria" is a multistakeholder effort to identify and implement priority actions needed to overcome key challenges in the malaria ecosystem. Launched in response to a 2023 call from the End Malaria Council, the initiative seeks to re-invigorate the global fight against malaria, recognizing the need to build on recent country calls and ready the ecosystem to rapidly launch tools. This approach aims to reduce burden while laying the groundwork for eradication. As part of this broader effort, **Antimalarial Drug Resistance (AMDR)** has been identified as a critical priority, requiring strengthened regional and multi-country coordination to respond to this biological threat.

To address this, the RBM Partnership to End Malaria in collaboration with WHO led a **global consultation on the coordination of AMDR surveillance and response efforts in Africa**, aiming to:

- Develop a shared understanding of challenges, through review of the current state of antimalarial resistance and surveillance in Africa & ongoing activities, and discussion of priorities and coordination needs.
- Develop a concrete roadmap defining strategies, roles, and mechanisms for improved coordinated response to AMDR at sub-regional and global level, leveraging as much as possible existing structures and networks.

This process followed a structured two-phased approach:

- **Phase 1: Structured pre-consultations by constituency**

  Before the in-person consultation, individual pre-consultations were conducted with each constituency to gather input on expectations, challenges, and priorities for AMDR collaboration. This ensured that discussions were informed and reflective of the unique perspectives of each stakeholder group. The constituencies engaged were 1) NMPs; 2) technical and strategic partners; 3) regional and continental organizations; 4) academia; 5) funders; and 6) the private sector.

- **Phase 2: In-person consultation to drive collective action**

  The two-day, in-person consultation was held on March 12-13, 2025, in Geneva, Switzerland, bringing together all constituencies to discuss coordination frameworks for sub-regional and global AMDR surveillance and response, ensure alignment on priorities and develop an actionable roadmap.

This report aims to summarize the key outcomes of the global consultation. The presentation materials for key takeaways have been attached as a separate document.

B. Meeting report

Day 1: 12 March 2025

1. Opening remarks, meeting objectives & agenda (Annex I)

1.1. Dr. Michael Charles (RBM) and Dr. Daniel Ngamije (WHO GMP) welcomed participants and emphasized the strong inclusivity of the meeting, with representation across a broad range of constituencies. They acknowledged the co-organization by WHO and RBM and expressed gratitude to FCDO for their support in the meeting organization.

1.2. Dr. Michael Charles (RBM) highlighted the critical role of both sub-regional and global coordination in addressing AMDR, recognizing it as a key priority of the «Big Push» initiative. He provided an overview of the timeline leading up to and following this meeting; with notable mention of the consultations that were conducted to collect input from each constituency prior to the meeting.

1.3. The meeting goals were outlined (see Section *Context and purpose of this document*).

1.4. A roundtable introduction followed, where participants shared their expectations for the meeting. The key meeting priorities identified were establishing a clear roadmap and coordination mechanisms for harmonization, data sharing, strengthening partnerships, and providing support to countries for developing strategies to address AMDR.

2. Current state of antimalarial drug resistance and surveillance in Africa

2.1. The session began with a presentation by Dr. Charlotte Rasmussen (WHO GMP) on the current state of AMDR in Africa, highlighting the **spread of artemisinin partial resistance** in East, Central, and Southern Africa, while partner drug resistance is yet to be confirmed. She emphasized gaps in surveillance and data quality, particularly regarding lumefantrine resistance, which remains uncertain due to lack of a defined IC_{50} threshold, variability in molecular correction methods, and inconsistencies in treatment monitoring. WHO is actively addressing these gaps through updating the surveillance guidance, developing a compendium of molecular markers and has established a roster of consultants to support TES implementation. The presentation also underscored the urgent need for sustained funding, especially in light of anticipated reductions in US support for malaria programs, which could disrupt TES implementation and ACT supply chains.

2.2. During the Q&A session, participants debated whether MMS could replace TES and concerns were raised about reporting AMDR cases among returning travelers, the slow pace of policy adaptation based on TES data, and the need to pool resources for more efficient surveillance. WHO GMP reaffirmed its intention to sustain TES as a critical tool for guiding treatment policies (in particular in the absence of molecular markers for lumefantrine resistance) and emphasized the importance of high-quality data sharing and flexible funding mechanisms to support ongoing surveillance efforts.

2.3. Dr. Rosie Ameyan (Global Fund) presented **lessons learned from the Greater Mekong Subregion** (GMS) response against AMDR through the Regional Artemisinin Resistance Initiative (RAI). Despite the presence of resistance, RAI successfully reduced *P. falciparum* cases in the region through a combination of pooled funding, strong regional coordination, and catalytic investments supporting malaria elimination efforts. A critical component of RAI was its regional approach, which facilitated cross-border collaboration, enhanced surveillance through a coordinated TES network, and strengthened governance. Additionally, the Mekong Malaria Elimination Database played a key role in improving data-sharing and risk assessment.

2.4. The subsequent Q&A session explored the feasibility of adapting a RAI-like model in Africa. While elements such as governance structure with a steering committee and a regional funding mechanism were seen as potentially transferable, participants acknowledged that RAI's extensive funding model would not be feasible at scale in Africa, which necessitates a more sustainable financial approach. Participants also discussed challenges in real-time data sharing within RAI, which were addressed by implementing

structured data-sharing agreements. Participants agreed that an optimal sub-regional group size of 5-6 countries would create a balance between multi-stakeholder engagement and operational efficiency.

2.5. The session continued with a presentation by Guervan Adnet (Boston Consulting Group) on ongoing **initiatives and networks** relevant to AMDR across Africa, activities by informal groups and key partner contributions across all four pillars of the AMDR strategy. Subsequent discussions centered on how to ensure sustainability and effective governance for AMDR initiatives. Concerns were raised that many African initiatives are short-term projects and require institutional support for long-term sustainability. Participants debated whether Africa CDC should take a leading role in the coordination mechanism and if a bottom-up model (e.g., starting from the programs) would be more effective.

2.6. Nicholas Sukitsch (Boston Consulting Group) gave an overview of the **potential funding risks** in view of the US Government withdrawal, which could impact commodity supply, program implementation and surveillance efforts. The subsequent discussions highlighted the participants' concerns over the immediate impact of USG funding cuts, as countries already experience stock outs of critical malaria commodities and planned TES have already been put on hold. Further concerns were raised as funders could potentially deprioritize AMDR. Efforts are underway from WHO AFRO through the CRSPC platform to provide transparency over reinstated waivers.

3. Problem statement

3.1. The session continued with a round table, where each participant shared their perspective on the three **most acute challenges** in AMDR surveillance and response and potential solutions for a coordinated approach. Across constituencies, major themes of challenges (beyond collaboration and coordination) were recognized and grouped under two main categories: Detection (i.e., surveillance) and Response - See complete list in Table 1. Participants then rank voted the identified challenges for detection and for response, separately, from highest to lowest priority. The voting results are shown in Table 1.

Table 1. Complete list of challenges to tackling AMDR in Africa, identified during round table, ranked from highest to lowest priority as per outcomes of voting

Ranking

Detection	Response
• Data sharing (across countries; to third parties; between academia and policy makers) • Molecular surveillance knowledge gaps • TES capacity • Data quality (incl. Protocol harmonization) • Molecular surveillance capacity • Completeness of guidance (e.g., MMS, prioritization)	• Implementation of antimalarial diversification (incl. supply chain) • Translation of surveillance data into policy & action • Involvement of private sector / availability of sub-standard drugs • Political will • Cross-border coordination • Regulatory & policy pathways for new products • Market shaping for new products • Adoption of global guidelines

3.2. Following the voting process, participants engaged in a discussion to refine and prioritize key challenges in AMDR detection and response.

3.3. For **detection**, there was consensus that data quality, sharing, and use are interlinked, and that without high-quality data, sharing becomes ineffective. Participants debated merging categories to better reflect knowledge gaps in molecular surveillance & TES capacity. Some proposed separating TES discussions into a dedicated forum, given its technical complexity and need for specialized attention.

3.4. For **response**, discussions focused on political will and translation of surveillance data into policy and action. Participants emphasized that political will must be bidirectional, involving both national governments and external partners in a cohesive, strategic framework. There were calls to engage not just policymakers, but also communities and private sector actors, ensuring that evidence-based interventions are aligned with national and regional priorities. It was proposed to reframe "political will" as "political

action", shifting the focus from intent to concrete commitments. Refinements were further made to reflect the need to define a strategy for antimalarial diversification, in addition to its implementation.

3.5. From the refined list of challenges, there was a consensus to prioritize the following four:

Decision Point 01 - Priority challenges to solve for:

- Sharing of quality data (*detection)*
- TES & MMS capacity (*detection)*
- Strategy and implementation of antimalarial drug diversification (*response)*
- Translation of surveillance data into a framework for policy and political action (*response)*

4. Closing remarks, Day 1

4.1. In his closing notes, Dr. Michael Charles (RBM) expressed gratitude to all participants for their valuable contributions and insights, emphasizing the need to align on a unified platform for AMDR coordination. It was reiterated that effective coordination must lead to tangible action, with a strong commitment to ensuring that all efforts remain Africa-centered and Africa-led.

Day 2: 13 March 2025

5. Opening remarks and high-level principles for coordination

5.1. At the beginning of Day 2, Dr. Daniel Ngamije (WHO) provided an overview of the key achievements from Day 1 and set the scene for discussion of the coordination framework. Dr. Michael Charles (RBM) presented **key principles** for a structured coordination approach at the sub-regional and global levels, with WHO and RBM serving as the convening bodies.

5.2. Participants emphasized **learnings from past mechanisms**, such as EANMAT, which successfully operated through a bottom-up approach. The role of NMPs was highlighted as central to implementation, requiring their perspectives to shape strategies and information flow. Discussions also stressed the importance of leveraging existing structures like Regional Economic Communities (RECs) to ensure sustainability and foster political commitment.

6. Sub-regional collaboration and coordination – the "WHAT"

6.1. The session opened with a **panel discussion** on key sub-regional activities requiring coordination, focusing on both detection and response. The discussion reinforced the critical role of molecular surveillance, the need for strong political commitment, and the importance of establishing sustainable frameworks. Concerns were raised about the dominance of academic-led initiatives; with broad consensus that NMPs should take the lead while leveraging academic expertise for technical support, rather than the other way around.

6.2. The synthesis of sub-regional activities discussed was presented and refined. Participants then voted to categorize activities into "**must-have"** or "**nice-to-have**", starting from detection activities and then moving on to response activities. An arbitrary cut-off of 70% of participants considering that an activity is a "must-have" was used to distinguish priority activities from other activities.

6.3. The detailed outcomes of the voting for **detection-related** activities are summarized in Table 2, which provides an overview of the complete list of activities along with the percentage of votes designating them as "must-have."

Table 2. Complete list of detection-related activities requiring sub-regional coordination, categorized into "priorities" and "other", as per outcomes of voting. Parentheses show the percentage of votes designating each activity as a "must have".

Sub-regional activities requiring coordination - Detection			
Priority activities		**Other activities**	
• Develop data sharing frameworks for timely surveillance data sharing	(90%)	• Support cross-border surveillance, e.g., sentinel sites	(62%)
• Support prioritization of surveillance activities (MMS vs. TES vs. in vitro)	(85%)	• Develop (sub-)regional laboratories to serve as centers of excellence for MMS	(60%)
• Support protocol and study development, clinical monitoring, data analysis and reporting	(72%)	• Conduct training to build clinical and laboratory skills	(58%)
• Develop and maintain regional dashboard	(70%)	• Set up regional procurement platform for supplies and reagents	(40%)
		• Define research agenda and priorities for regions	(33%)
		• Conduct independent clinical monitoring / audits	(17%)

Decision Point 02 - Priority sub-regional activities requiring coordination for Detection

- Develop data sharing frameworks for timely surveillance data sharing
- Support prioritization of surveillance activities (MMS vs. TES vs. in vitro)
- Support protocol and study development, clinical monitoring, data analysis and reporting
- Develop and maintain regional dashboard

6.4. The detailed outcomes of the voting for **response-related** activities are summarized in Table 3, which provides an overview of the complete list of activities along with the percentage of votes designating them as "must-have."

Table 3. Complete list of response-related activities requiring sub-regional coordination, categorized into "priorities" and "other", as per outcomes of voting. Parentheses show the percentage of votes designating each activity as a "must have"

Sub-regional activities requiring coordination - Response			
Priority activities		**Other activities**	
• Support NMPs / policy makers to understand surveillance data & act on it	(89%)	• Improve ACT quality and diversification (especially in private sector)	(67%)
• Support development of national drug resistance strategies	(82%)	• Advocate for sustained political commitment	(64%)
• Track implementation of country responses	(76%)	• Provide practical support for national adaptation of global guidelines based on local data	(57%)
• Organize meetings to share best practices on response to DR	(71%)	• Coordinate collection of data in the private sector	(44%)
		• Improve access for hard-to-reach populations	(36%)

Decision Point 03 - Priority sub-regional activities requiring coordination for Response

- Support NMPs / policy makers to understand surveillance data & act on it
- Support development of national drug resistance strategies
- Track implementation of country responses
- Organize meetings to share best practices on response to DR

7. Sub-regional collaboration and coordination – the "HOW"

7.1. Subsequently, the discussion shifted toward identifying **mechanisms** to effectively coordinate sub-regional activities across the four sub-regions: Eastern Africa (including the Horn of Africa), Southern Africa, Western Africa and Central Africa. It was agreed that each sub-region would have a **dual-level** mechanism with:

i) a political umbrella for high-level engagement, advocacy and financial sustainability, and,
ii) technical networks to oversee implementation, leveraging existing structures when they exist.

7.2. There was general agreement that these coordinating structures should be as lean as possible and be designed as a "minimum viable product". It was also emphasized that programs should be involved from the get-go.

7.3. For **Eastern Africa**, the East Africa Regional Coordinating Committee (EA-RCC) was proposed as the political umbrella for coordination, as it covers 14 countries in the region. HANMAT was highlighted as a key mechanism for antimalarial surveillance coordination in the Horn of Africa, with strong collaboration between IGAD and WHO EMRO, EMRO providing secretariat support. HANMAT was recognized as an effective, lean and financially sustainable network that could serve as a model for the other regions. HANMAT's activities however mostly focus on detection to-date and would need to be extended to cover all priority activities identified. It was also noted that HANMAT has expanded its scope to cover other biological threats such as HRP2/3 deletions, insecticide resistance and invasive species (e.g., *An. stephensi*). Within the broader East African region, existing platforms such as the Great Lakes Malaria Initiative were recognized as valuable but insufficient on their own. EANMAT, a previously established network for antimalarial drug resistance monitoring in the region, was disbanded due to sustainability and coordination challenges. However, there is now an opportunity to revive a similar mechanism, learning from past EANMAT shortcomings to ensure long-term sustainability and alignment with current regional priorities. Based on these discussions, it was concluded that a mechanism similar to EANMAT would be the most appropriate approach. The agreed coordination mechanism is shown in the Figure below.

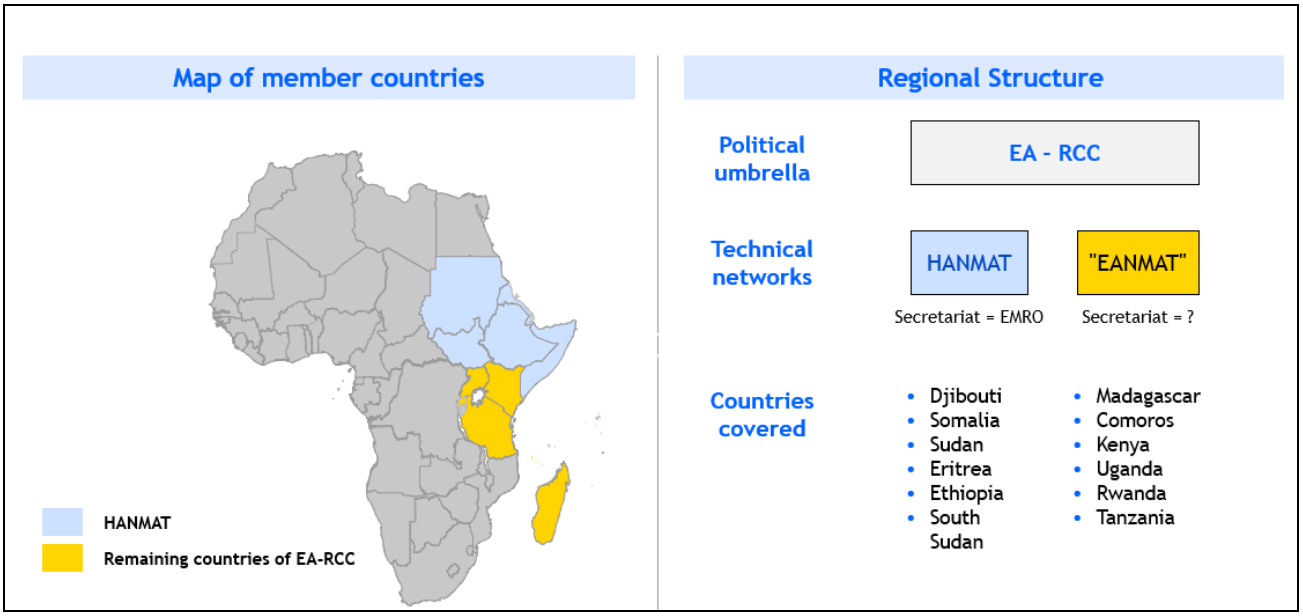


Figure 1. Sub-regional coordination mechanism for Eastern Africa.

Decision Point 04 – AMDR coordination within Eastern Africa

- The East Africa Regional Coordinating Committee (EA-RCC) was designated as the political umbrella for coordination
- In the Horn of Africa, HANMAT was assigned as the coordinating technical network (with its secretariat housed within WHO EMRO)
- For the remaining countries of Eastern Africa, a new structure modeled after EANMAT was proposed, with the secretariat yet to be determined.

7.4. For **Southern Africa**, the discussion focused on potentially leveraging the SADC Elimination Initiative as a technical body to coordinate surveillance and resistance response. In addition, SADC's established malaria reporting and coordination structures were recognized as key advantages, providing a platform for regional engagement, data exchange, and political backing. The agreed coordination mechanism is shown in the Figure below.

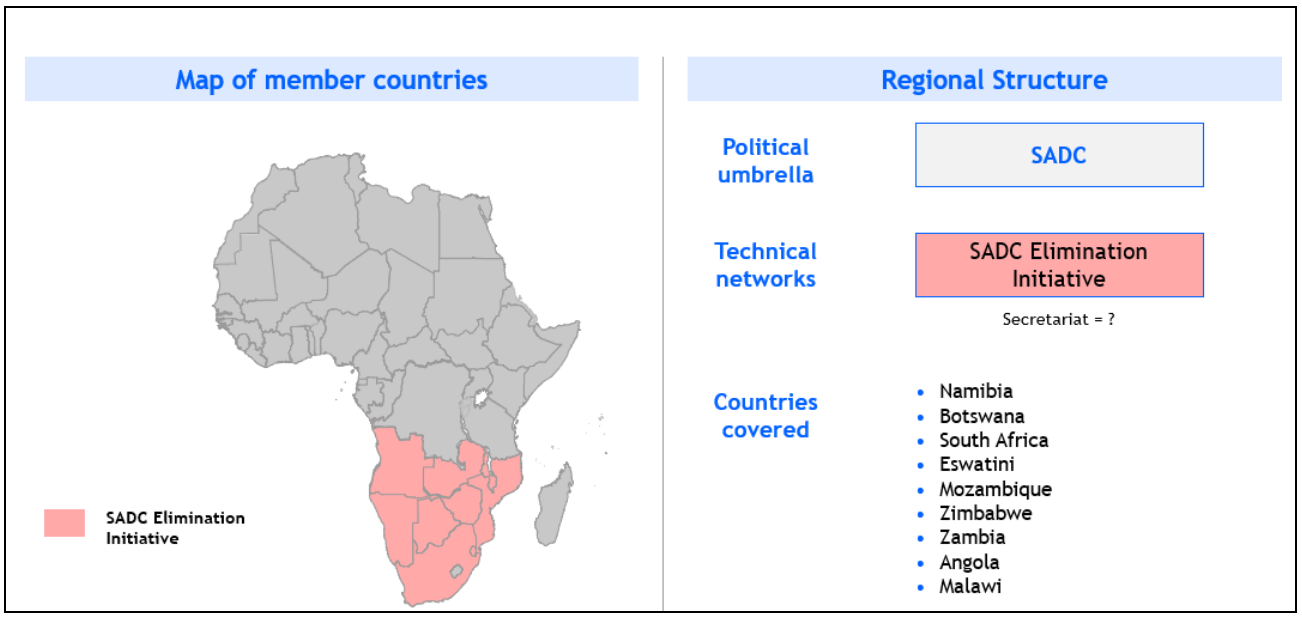


Figure 2. Sub-regional coordination mechanism for Southern Africa.

Decision Point 05 – AMDR coordination within Southern Africa

- SADC was designated as the political umbrella for coordination
- SADC Elimination Initiative was assigned as the coordinating technical network

7.5. For **Western Africa**, efforts are underway to establish a regional network for AMDR surveillance, referred to as the West African Network for Surveillance of Antimalarial Resistance (WANSAR), covering the entire sub-region. Initial steps involve engaging NMPs from all participating countries, alongside active involvement from academia and RBM. This could be done under the umbrellas of ECOWAS & AES. WHO AFRO and Africa CDC hold a central position that could bring unity in the action against drug resistance by providing secretariat services. The agreed coordination mechanism is shown in the Figure below.

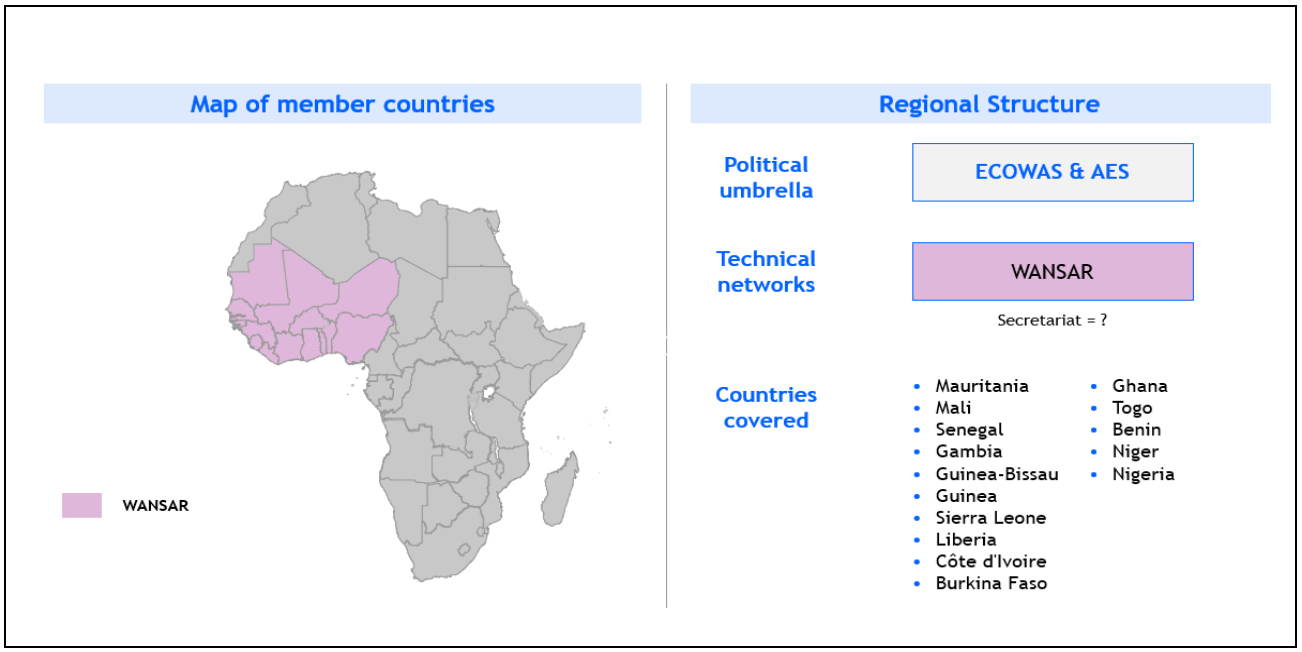


Figure 3. Sub-regional coordination mechanism for Western Africa.

Decision Point 06 – AMDR coordination within Western Africa

- Political umbrella potentially under ECOWAS and AES
- WANSAR was assigned as the coordinating technical network

7.6. For **Central Africa**, it was highlighted that there are significant gaps in surveillance data and coordination, with concerns that ongoing resistance trends are not being fully captured due to limited data-sharing mechanisms. OCEAC, which works on cross-border initiatives and vector control, was recognized as a key player in the region, while ECCAS provides a broader political framework. The possibility of including DRC and Burundi in coordination efforts was also raised, as well as the opportunity to leverage the Central Africa Clinical Research Network (CANTAM). WHO AFRO has an existing collaboration framework with OCEAC and ECCAS, which could be leveraged for structuring AMDR activities in the region. The agreed coordination mechanism is shown in the Figure below.

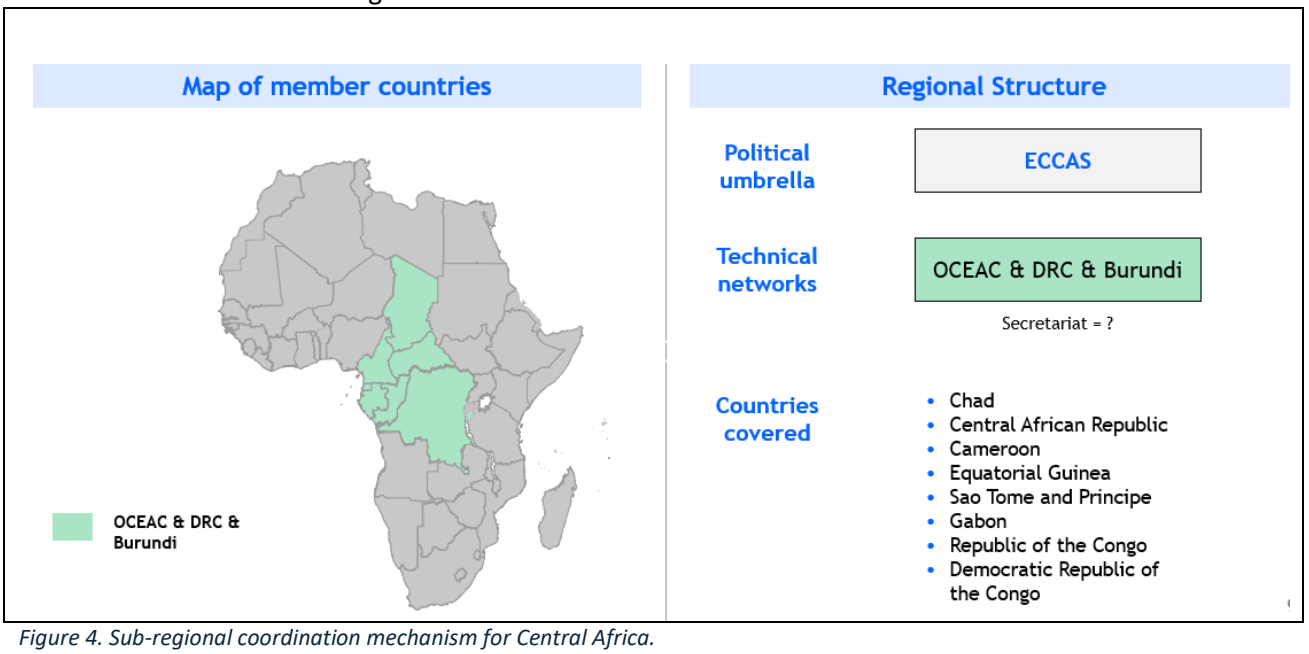


Figure 4. Sub-regional coordination mechanism for Central Africa.

Decision Point 07 – AMDR coordination within Central Africa

- ECCAS was designated as the political umbrella for coordination
- OCEAC, including DRC & Burundi, was assigned as the coordinating technical network

8. Global collaboration and coordination – the "WHAT"

8.1. A panel discussion on **global topics** requiring collaboration and coordination took place. Participants emphasized the need for streamlining procurement and supply chains, securing sustainable funding, strengthening advocacy efforts, and improving data-sharing mechanisms. Discussions also underscored the importance of integrating AMDR surveillance into broader health security frameworks and fostering domestic resource mobilization. As a result, 10 key global topics requiring enhanced collaboration were identified and lead organizations were assigned to drive progress in these areas:

Table 4. Global topics requiring enhanced collaboration and lead organizations assigned to drive progress.

Topic	Leading organization
Research agenda	WHO Science Division and RBM Science & Innovation
Product development	MMV and RBM Private Sector
Policy & regulatory pathways	WHO
Norms, standards & guidance	WHO
Demand forecasting & global supply chains	CHAI
Market shaping	Global Fund, Unitaid and Gates Foundation
Technical assistance	RBM (CRSPC) and WHO
Resource mobilization	RBM (ARCPC) and ALMA
Advocacy & communication	RBM (ARCPC), ALMA and Africa CDC
M&E and surveillance & progress	WHO AFRO/EMRO, Africa CDC, RBM (SMEWG)

9. Global collaboration and coordination – the "HOW"

9.1. To ensure alignment, it was agreed that RBM/WHO would co-convene annual or bi-annual meetings, where updates would be shared across all 10 topics. In addition to this overarching coordination mechanism, lead organizations will be in charge of facilitating collaboration within their assigned topic areas. The level of coordination needed (e.g., frequency of engagement, ways of working) will vary across topics:

- High-touch topics, such as market shaping, will require regular check-ins and active coordination to align stakeholders
- Other topics, such as norms, standards, and guidance, may require less frequent engagement, with written updates and periodic consultations being sufficient

10. Roadmap and next steps

10.1. The consultation concluded with commitments to operationalize the agreed coordination structures.

10.2. Focal points were identified for each sub-region. They were instructed to establish task forces of interested parties, who will then conduct gap assessments to evaluate current activities of existing networks versus the needs prioritized by the group. Additionally, the task forces will focus on defining governance structures and identifying resource requirements to ensure long-term sustainability. These elements will be consolidated in a concept note, ensuring a structured, resource-backed approach to AMDR subregional coordination (Figure 5).

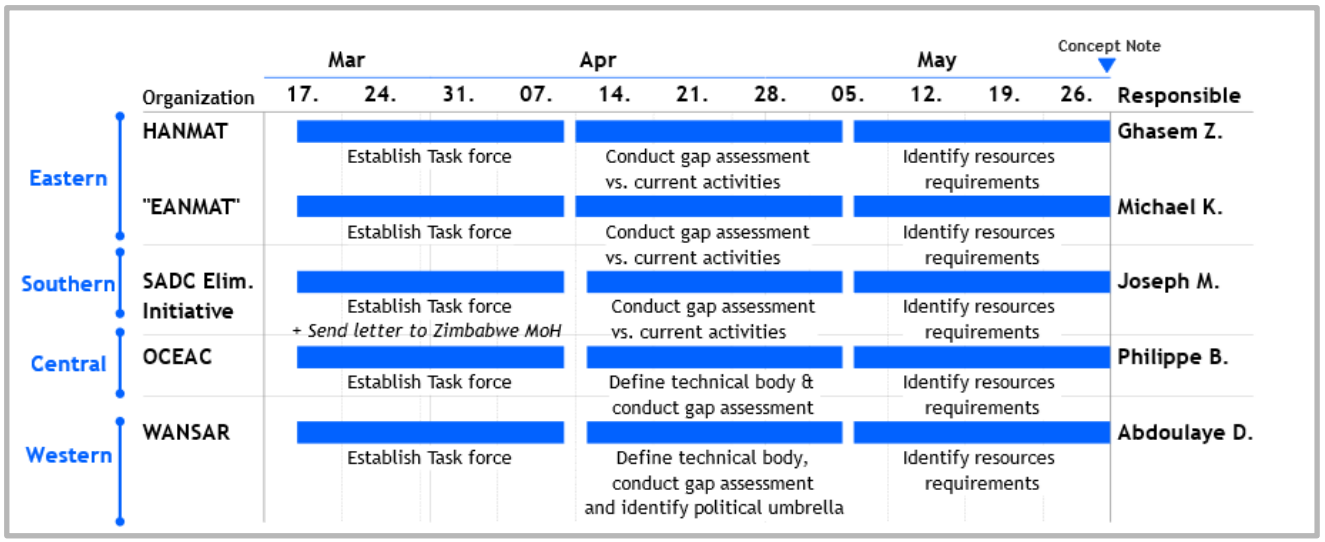


Figure 5. Roadmap for subregional coordination.

10.3. For global coordination, a small working group will be assembled to refine the list of key global topics requiring collaboration. For each global topic, lead organizations will define terms of reference, invite key stakeholders to join, and organize thematic discussions. These efforts will culminate in an annual RBM/WHO co-convened meeting, where updates on progress will be shared (Figure 6).

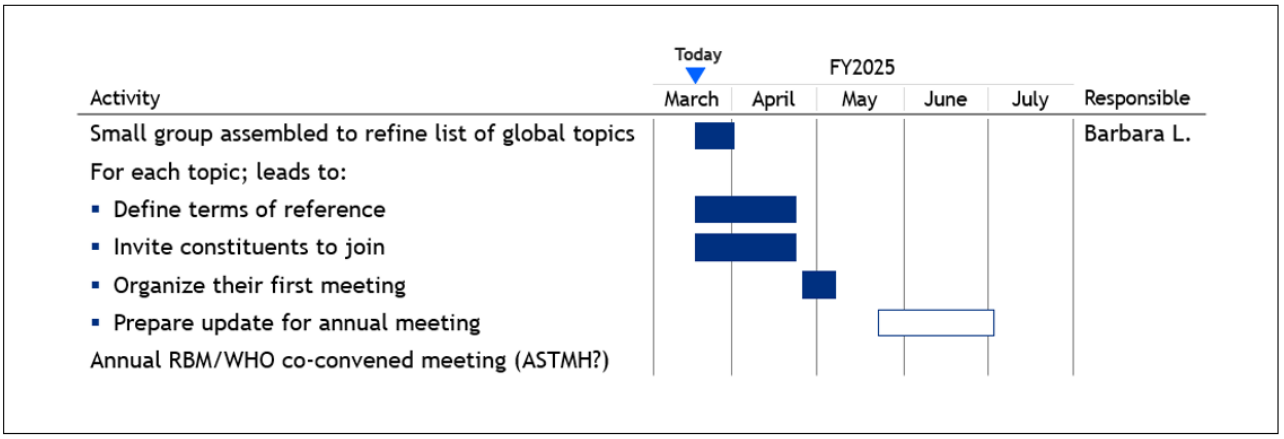


Figure 6. Roadmap for global coordination.

10.4. In addition to sub-regional and global coordination efforts, the consultation emphasized the need for continued engagement on the identified priority challenges. To sustain momentum, it was agreed that virtual follow-up discussions will be organized to further refine solutions for sharing of quality data, TES & MMS capacity, antimalarial diversification, and translating surveillance data into policy and political action. Co-chairs were identified for each topic. A follow up meeting will be held in May to review discussion outcomes and design concrete action plans for tackling these priority challenges (Figure 7).

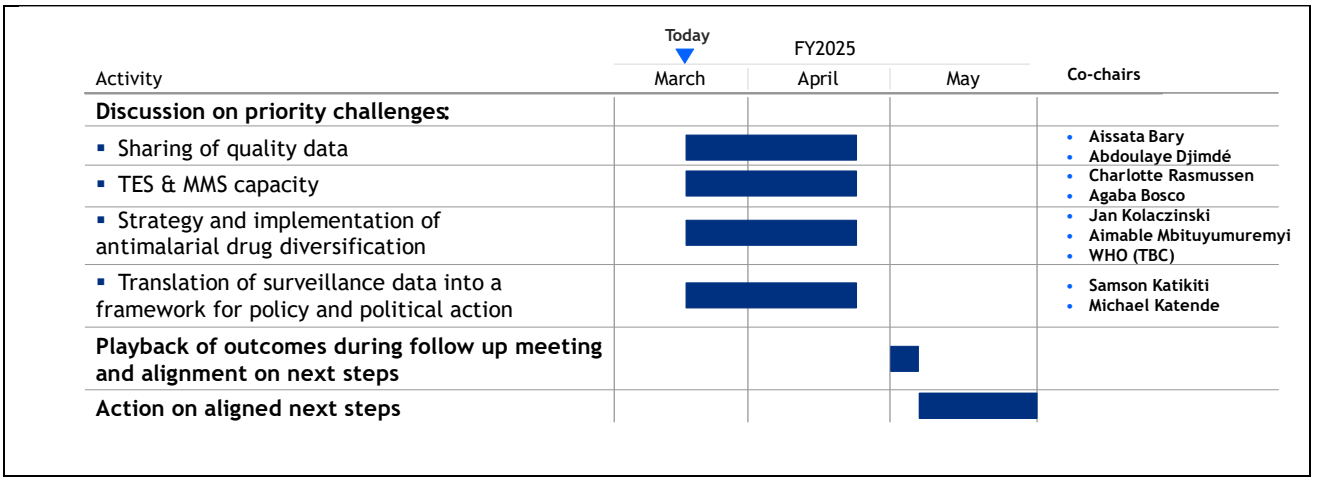


Figure 7. Roadmap for key priority challenges identified on Day 1.

10.5. As far as political next steps are concerned, Dr. Daniel Ngamije (WHO) presented the planned engagement at the 78th **World Health Assembly** (WHA), where an official request from the Rwanda Ministry of Health is under review to secure a dedicated session on AMDR. This event aims to feature high-level statements from key officials, a presentation on the RAI experience in the GMS, and participation from high burden high impact countries, neighboring nations, the Africa CDC, academia, funders, and other key stakeholders. Discussions will focus on AMDR root causes, operational challenges, global and regional coordination, and resource mobilization, with the objective of securing ministerial commitments to establish AMDR regions.

11. Closing remarks, Day 2

11.1. The meeting concluded with a round table session, where participants from various constituencies shared their key takeaways. There was a strong sense of optimism and urgency, with many emphasizing the progress made in shaping a coordinated response to AMDR. Several participants noted that the real challenge lies in translating discussions into concrete actions.

11.2. Dr. Michael Charles (RBM) and Dr. Daniel Ngamije (WHO GMP) closed the meeting, reinforcing the importance of moving beyond discussions to implementation. They called on participants to continue working collectively to refine plans, mobilize resources, and ensure commitments translate into action.

Annex I – Meeting Agenda

Day 1: Establish a shared understanding & align on problem statement (1/2)

Session	Session Topics	Facilitators & speakers	Time (CET)	Type of Session
Introduction	• Opening remarks by RBM & WHO • Overview of agenda, format, ground rules and guiding principles • Participant introductions in a roundtable format (name, organization, role, and expectations for the meeting)	• Michael Charles (RBM), Daniel Ngamije (WHO GMP) • Isabella Oyier (RBM Board Science & Innovation) • Facilitator: Dorothy Achu (WHO AFRO)	9:00-9:30	Presentation/ introduction
Latest evidence on drug resistance, lessons learnt & initiatives	• Drug resistance in Africa: Status of artemisinin partial resistance and partner drug resistance	• Charlotte Rasmussen (WHO GMP) • Facilitator: Dorothy Achu (WHO AFRO)	9:30-10:00	Presentation (15 min) & Q&A (15 min)
	• Lessons from GMS response against antimalarial drug resistance	• Rosie Ameyan (Global Fund) • Facilitator: Dorothy Achu (WHO AFRO)	10:00-10:30	Presentation (15 min) & Q&A (15 min)
	• High level summary of ongoing & planned initiatives in Africa	• Guervan Adnet (BCG) • Facilitator: Isabella Oyier (RBM Board Science & Innovation)	10:30-11:00	Presentation (15 min) & Q&A (15 min)
Coffee Break			11:00-11:30	
Drug resistance in the current USG context	• Impact of US government on drug procurement, ACT diversification and TES	• Nic Sukitsch (BCG) • Facilitator: Isabella Oyier (RBM Board Science & Innovation)	11:30-12:00	Presentation (15 min) & Q&A (15 min)

Day 1: Establish a shared understanding & align on problem statement (2/2)

Session	Session Topics	Facilitators & speakers	Time (CET)	Type of Session
Problem statement	• Brief statement from each organization grouped by constituency on most acute challenges related to drug resistance and potential solutions (Part 1)	• Constituencies: Countries, RECs & Regional Partners, Technical & Strategic Partners • Facilitator: Isabella Oyier (RBM Board Science & Innovation)	12:00-13:10	Discussion (1h10)
Lunch Break		•	13:10-14:10	
Problem statement	• Brief statement from each organization grouped by constituency on most acute challenges related to drug resistance and potential solutions (Part 2)	• Constituencies: Private sector, Academia, Funders • Facilitator: Dorothy Achu (WHO AFRO)	14:10-15:30	Discussion (1h20)
Coffee Break		•	15:30-16:00	
Problem statement	• Summary of statements supplemented with consultation insights, and categorization of challenges & needs	• Nic Sukitsch (BCG)	16:00-16:15	Presentation
	• Rank voting to determine priority challenges	• Guervan Adnet (BCG)	16:15-16:45	Slido and discussion
	• Agreement on 1-2 other challenges beyond coordination to be discussed during Day 2	• Facilitator: Daniel Ngamije (WHO GMP)	16:45-17:15	Discussion
Closing notes	• Remarks on Day 1 achievements and preparation for Day 2 of the meeting	• Wrap up: Michael Charles (RBM) • Preview of Day 2: Daniel Ngamije (WHO GMP)	17:15-17:30	Discussion

Day 2: Define the way forward (1/2)

Session	Session Topics	Facilitators & speakers	Time (CET)	Type of Session
Introduction	• Welcoming remarks, Day 1 recap & plan for Day 2	• Daniel Ngamije (WHO GMP)	8:45-9:00	Presentation
Coordination framework: Introduction	• Presentation on high-level principles for efficient coordination at different levels: supranational (i.e., sub-regional) and inter-agency (i.e., global) to improve surveillance and response to AMDR	• Michael Charles (RBM)	9:00-9:15	Presentation (10 min) & Q&A (5 min)
Coordination framework: Sub-regional level	• Panel discussion (with reps from all constituencies) on activities at subregional level requiring collaboration and coordination	• Facilitator: Dorothy Achu (WHO AFRO)	9:15-10:00	Panel (25 min) & discussion (20 min)
Coffee Break			10:00-10:30	
Coordination framework: Sub-regional level	• Presentation of synthesis/bucketing of activities that have emerged in the panel discussion and categorization into “must have” and “nice to have” through vote	• Nic Sukitsch (BCG)	10:30-11:00	Slido & discussion
	• Recap of existing coordination & collaboration mechanisms across sub-regions, gaps and overlaps • Discussion on options for well-functioning networks to coordinate activities for each sub-region (Part 1 – Eastern Africa): - Leveraging existing mechanisms, how can collaboration and coordination be organized? - What are the minimal resource requirements to support inter-country collaboration and coordination mechanisms?	• Guervan Adnet (BCG) • Facilitator: Dorothy Achu (WHO AFRO)	11:00-12:00	Presentation (10 min) & discussion (50 min)

Day 2: Define the way forward (2/2)

Session	Session Topics	Facilitators & speakers	Time (CET)	Type of Session
Lunch Break			12:00-13:00	
Coordination framework: Sub-regional level	• Discussion on options for well-functioning networks to coordinate activities for each sub-region (Part 2 – Southern Africa, Western Africa & Central Africa): - Leveraging existing mechanisms, how can collaboration and coordination be organized? - What are the minimal resource requirements to support inter-country collaboration and coordination mechanisms?	• Facilitator: Dorothy Achu (WHO AFRO)	13:00-14:30	Discussion (90 min)
Coordination framework: global/ inter-agency level	• Panel discussion (with reps from all constituencies) on topics that require global coordination and the mechanism(s) to achieve that	• Facilitator: Isabella Oyier (RBM Board Science & Innovation)	14:30-15:15	Panel (25 min) & discussion (20 min)
	• Synthesis of priority topics requiring global coordination that have emerged in the panel discussion, reactions from participants to possible options to improve inter-agency coordination	• Presentation of synthesis by Guervan Adnet (BCG) • Facilitator: Michael Charles (RBM)	15:15-15:45	Presentation (10 min) & discussion (20 min)
Coffee Break			15:45-16:15	
Next steps	• Alignment on high-level roadmap, including timeline, priority geographies, roles & responsibilities, proof of concept vs blanket rollout	• Facilitator: Isabella Oyier (RBM Board Science & Innovation)	16:15-17:00	Presentation (15 min), discussion (30 min)
	• Discussion around political next step	• Facilitator: Daniel Ngamije (WHO GMP)	17:00-17:15	Discussion (15 min)
	• Brief statement from each participant representing their own constituency to share next steps	• Facilitator: Michael Charles (RBM)	17:15-17:45	Discussion (30 min)
	• Closing remarks	• Michael Charles (RBM), Daniel Ngamije (WHO GMP)	17:45-18:00	Presentation

Annex II - List of participants

Organizers

RBM Secretariat		
Name	**Role**	**Comments**
Michael Adekunle Charles	CEO	-
Barbara Laurenceau	Head of Programs	-
Daddi Wayessa	Regional and Country Support Manager	-
Konstantina Boutsika	Working Groups Specialist	-

WHO GMP		
Name	**Role**	**Comments**
Daniel Ngamije	Director, GMP	-
Alastair Robb	Senior Advisor to Director, GMP	-
Andrea Bosman	Unit Head, Diagnostics, Medicines, and Drug Efficacy and Response	-
Charlotte Rasmussen	Technical Officer, Drug Efficacy and Response	-
Didier Leroy	Senior Director Biology in Medicines for Malaria Venture, seconded to WHO GMP	-

WHO AFRO		
Name	**Role**	**Comments**
Dorothy Achu	CRSPC Co-chair	Facilitator

WHO EMRO		
Name	**Role**	**Comments**
Ghasem Zamani	Regional Advisor	-

NMPs

Name	Country	Comments
Dalya Eltayeb	Sudan	*Virtual – Day 1* *In person – Day 2*
Aissata Barry	Burkina Faso	*Virtual*
Gudissa Assefa	Ethiopia	-
Simon Ijezie	Nigeria	*Virtual*
Aimable Mbituyumuremyi	Rwanda	-
Sijenunu Aron	Tanzania	*Virtual*
Agaba B. Bosco	Uganda	-
Steven Bwalya	Zambia	*Virtual*

Technical & Strategic Partners

Name	Organization	Comments
Theodoor Visser	CHAI	-
Rima Shretta	JHPIEGO	-
Adam Aspinall	MMV	*Only Day 1*
George Jagoe	MMV	*Only Day 2*
Hana Bilak	PATH	-
Paul Bouanchaud	ACT WatchLite	-

Regional & Continental Partners

Name	Organization	Comments
Samson Katikiti	ALMA	-
Michael Katende	RBM RECs and Sub regional offices	-
Vonai Teveredzi	RBM RECs and Sub regional offices	-
Noella Umulisa	RBM CMWG Co-chair	*Virtual*
Bernards Ogutu	RBM CMWG Member & KEMRI	-
Serge Batcho	Africa CDC	-

Private Sector

Name	Organization	Comments
Caroline Boulton	Novartis	-
Rihana Diabo	GSK	-

Academia

Name	Organization	Comments
Isabella Oyier	RBM Board Science & Innovation	Facilitator
Roly Gosling	LSTMH	-
Karen Barnes	MARC-SE	-
David Fidock	Columbia University Irving Medical Center	-
Umberto d'Alessandro	LSTMH	-
Philippe Guérin	WWARN	-
Arjen Dondorp	DeTACT / MORU	-
Abdoulaye Djimdé	University of Science, Techniques and Technology of Bamako	*Virtual*
Dyann Wirth	Harvard T.H. Chan School of Public Health	*Virtual*
Deusdedith Ishengoma	National Institute of Medical Research, Tanzania	-
Khalid Beshir	LSTMH	-

Funders

Name	Organization	Comments
Veronica Noseda	L'Initiative - Expertise France	-
Ahmer Akhtar	FCDO	-
Jo Mulligan	FCDO	*Virtual*
Tayo Nwaubani	FCDO	*Virtual*
Ruth Lawson	FCDO	*Virtual*
Nicholas Luter	Gates Foundation	*Only Day 2 - virtual*
Estée Török	Gates Foundation	-
Htin Kyaw Thu	Global Fund	-
Roopal Patel	Global Fund	-
Rosie Ameyan	Global Fund	-
Jan Kolaczinski	Unitaid	-
Michael Aidoo	US CDC	*Virtual*
Laura Steinhardt	US CDC	*Virtual*

Special Invitees

Name	Organization	Comments
Guervan Adnet	Boston Consulting Group	-
Nicholas Sukitsch	Boston Consulting Group	-
Matina Pagoulatou	Boston Consulting Group	-
Francois Sauget	Boston Consulting Group	-

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

Andrea Bosman, Unit Head
Diagnosis, Medicine and Resistance
Global Malaria Programme

World Health Organization

Presentation outline

- From WHO Strategy to Regional Stakeholder Consultation, calls from scientific community and funding agencies and MPAG recommendations
- RBM-WHO Global Consultation on Coordination of Antimalarial Drug Resistance Surveillance and Response in Africa, 12-13 March 2025
- Main take-aways and next steps on subregional networks

World Health Organization

Advice from Malaria Policy Advisory Group (October 2024)

- MPAG strongly encouraged **the re-establishment or strengthening of subregional networks** in Africa, to conduct TESs and molecular surveillance, coordinate activities, share data and information, and implement training and capacity development.
- **Surveillance needs to be conducted in all parts of Africa**, not just in the current hotspots of artemisinin partial resistance
- The Global Malaria Programme should **mobilise Ministers of Health and Heads of States**, on the need for urgent action.
- A **coordinated action plan is needed to secure a much higher level of funding** to combat resistance that can be sustained, as drug resistance poses a far greater risk in Africa than in Asia, where considerably more funds have been allocated to tackle resistance.

World Health Organization

(https://www.who.int/publications/i/item/9789240105300)

RBM Partnership To End Malaria

Global Consultation On Coordination Of Antimalarial Drug Resistance Surveillance And Response Efforts In Africa

March 12-13

Key takeaways and next steps

RBM and WHO global consultation on coordination planned since Q3 2024….

Global consultation to coordinate antimalarial resistance surveillance and response in Africa

Objectives

1. Review activities, plans, priorities of global partners investing in antimalarial drug resistance and response in Africa
2. Discussion of the areas requiring coordination and support, and effective supportive mechanisms
3. Discussion of the creation of sub-regional networks on drug resistance and response as multi-country platforms for data sharing and policy response, in the Horn of Africa, Eastern-Southern Africa, Central Africa, and Anglophone West Africa and Francophone West Africa.

Expected Outcomes

1. Shared understanding of knowledge, perspectives and challenges to coordinate drug resistance efforts in Africa
2. An agreed-upon roadmap outlining critical areas, strategies, mechanisms and roles to enhance coordination including sub-regional networks on drug resistance and response.

List of participants

Constituencies

NMPs		Academia		RECs & Regional Partners		Funders		Technical & Strategic Partners		Private Sector	
Ethiopia	• Gudissa Assefa	**LSTM&H**	• Roly Gosling • Khalid Beshir	**ALMA**	• Samson Katikiti	**UNITAID**	• Jan Kolaczinski	**PATH**	• Hana Bilak	**Novartis**	• Caroline Boulton
Rwanda	• Aimable Mbituyumuremyi	**MARC-SE**	• Karen Barnes	**RBM RECs** focal points	• Michael Katende • Vonai Taveredzi	**Gates Founda-tion**	• Nicholas Luter • Estee Torok	**CHAI**	• Theodoor Visser	**GSK**	• Rihana Diabo
Uganda	• Agaba B. Bosco	**WWARN**	• Philippe Guérin	**RBM CMWG** Co-Chairperson	• Noella Umulisa	**Global Fund**	• Htin Kyaw Thu • Roopal Patel • Rosie Ameyan	**MMV**	• Adam Aspinall /George Jagoe	**PSI-ACTWatch Lite**	• Paul Bouanchaud
Tanzania	• Sijenunu Aron	**DeTACT/ MORU**	• Arjen Dondorp	**Africa CDC**	• Serge Batcho	**FCDO**	• Ahmer Akhtar	**JHPIEGO**	• Rima Shretta		
Zambia	• Sampa Chitambala-Otiono	**WHO MPAG**	• David Fidock • Umberto D'Alessandro • Abdoulaya Djimdé • Dyann Wirth			**Expertise France - L'Initiative**	• Veronica Noseda	**US CDC**	• Michael Aidoo • Laura Steinhardt		
Burkina Faso	• Aissata Barry	**RBM BSI**	• Isabella Oyier								
Nigeria	• Nnenna Ogbulafor • Simon Ijezie	**NIMR**	• Deusdedith Ishengoma								
Sudan	• Dalya Eltayeb										

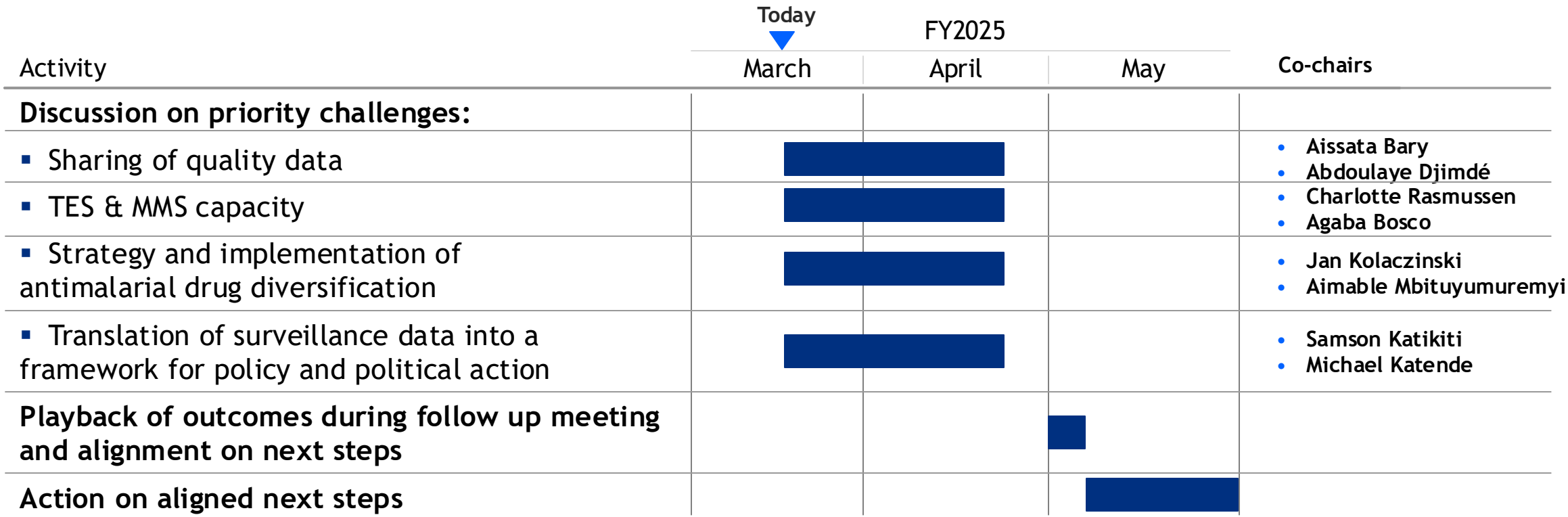
15 participants in total from RBM, WHO & BCG

Total of 55 participants

Key takeaways & next steps

1. **Priority challenges identified during Day 1**
2. Sub-regional coordination framework: "WHAT", "HOW" and roadmap
3. Global coordination framework: "WHAT", "HOW" and roadmap

Roadmap for key priority challenges identified on Day 1



Key takeaways & next steps

1. Priority challenges identified during Day 1
2. Sub-regional coordination framework: "WHAT", "HOW" and roadmap
3. Global coordination framework: "WHAT", "HOW" and roadmap

Categorization of sub-regional activities that require collaboration & coordination into "must have" and "nice to have" - Detection

Priority activities

Develop data sharing frameworks for timely surveillance data sharing	(90%)
Support prioritization of surveillance activities (MMS vs. TES vs. in vitro)	(85%)
Support protocol and study development, clinical monitoring, data analysis and reporting	(72%)
Develop and maintain regional dashboard	(70%)

Other activities

Support cross-border surveillance, e.g., sentinel sites	(62%)
Develop (sub-)regional laboratories to serve as centers of excellence for MMS	(60%)
Conduct training to build clinical and laboratory skills	(58%)
Set up regional procurement platform for supplies and reagents	(40%)
Define research agenda and priorities for regions	(33%)
Conduct independent clinical monitoring / audits	(17%)

Categorization of sub-regional activities that require collaboration & coordination into "must have" and "nice to have" - Response

Priority activities

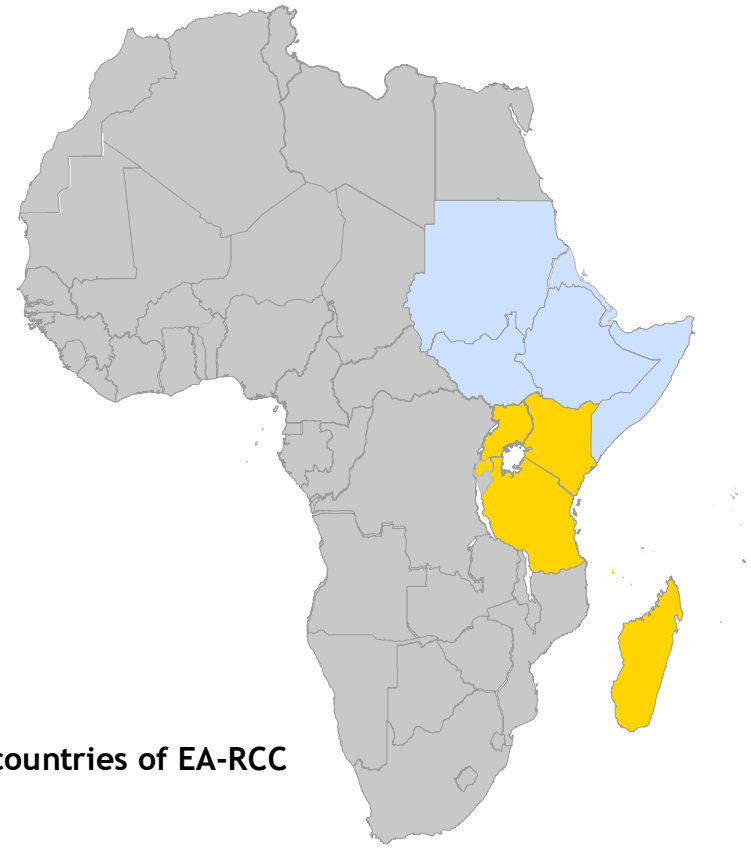
Support NMPs / policy makers to understand surveillance data & act on it	(89%)
Support development of national drug resistance strategies	(82%)
Track implementation of country responses	(76%)
Organize meetings to share best practices on response to DR	(71%)

Other activities

Improve ACT quality and diversification (especially in private sector)	(67%)
Advocate for sustained political commitment	(64%)
Provide practical support for national adaptation of global guidelines based on local data	(57%)
Coordinate collection of data in the private sector	(44%)
Improve access for hard-to-reach populations	(36%)

Subregional coordination structure for East Africa & HoA

Map of member countries



HANMAT

Remaining countries of EA-RCC

Regional Structure

Political umbrella

EA - RCC

Technical networks

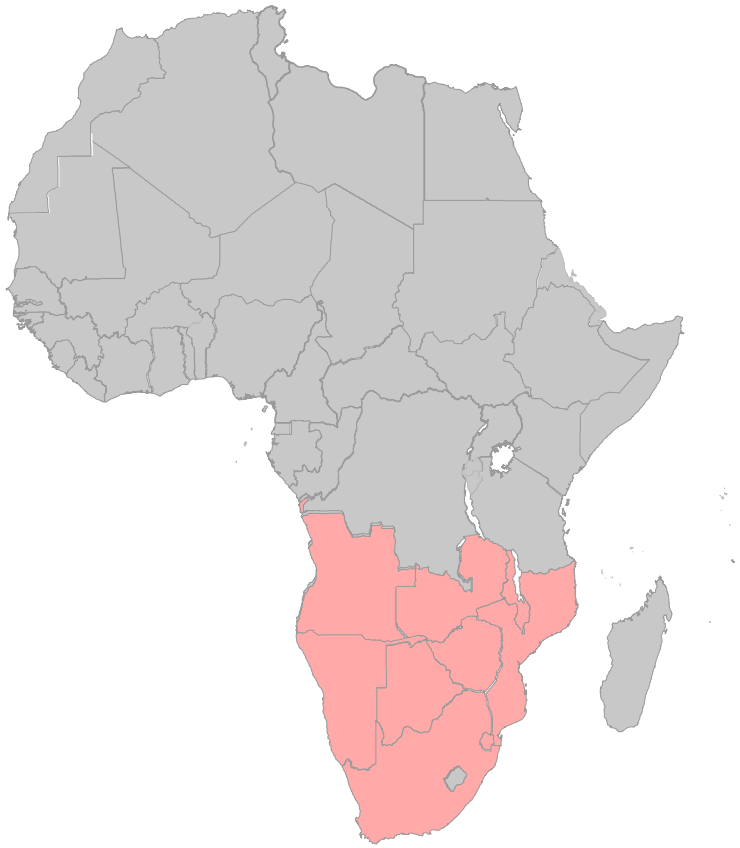
HANMAT	"EANMAT"
Secretariat = EMRO	Secretariat = ?

Countries covered

- Djibouti
- Somalia
- Sudan
- Eritrea
- Ethiopia
- South Sudan
- Madagascar
- Comoros
- Kenya
- Uganda
- Rwanda
- Tanzania

Subregional coordination structure for Southern Africa

Map of member countries



E8 + Malawi

Regional Structure

Political umbrella

SADC

Technical networks

E8 + Malawi

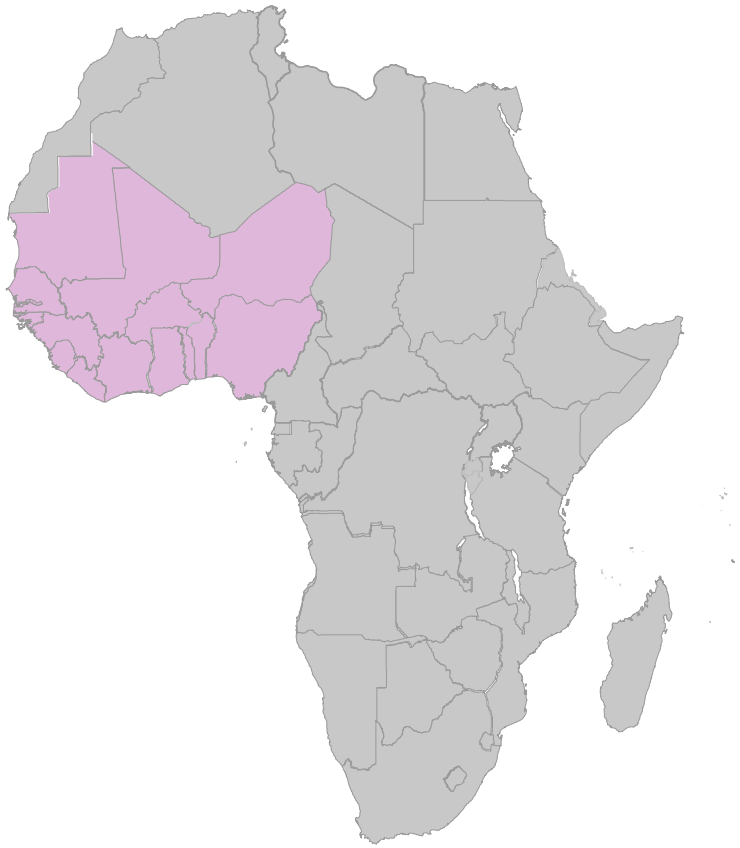
Secretariat = ?

Countries covered

- Namibia
- Botswana
- South Africa
- Eswatini
- Mozambique
- Zimbabwe
- Zambia
- Angola
- Malawi

Subregional coordination structure for Western Africa

Map of member countries



WANSAR

Regional Structure

Political umbrella

TBD

Technical networks

WANSAR

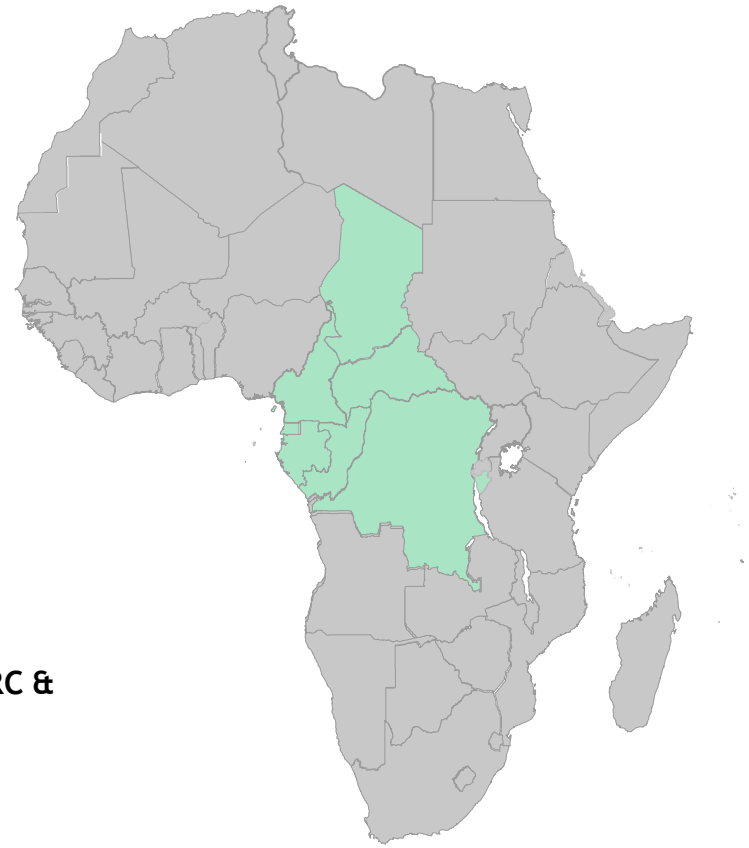
Secretariat = ?

Countries covered

- Mauritania
- Mali
- Senegal
- Gambia
- Guinea-Bissau
- Guinea
- Sierra Leone
- Liberia
- Côte d'Ivoire
- Burkina Faso
- Ghana
- Togo
- Benin
- Niger
- Nigeria

Subregional coordination structure for Central Africa

Map of member countries



OCEAC & DRC & Burundi

Regional Structure

Political umbrella

ECCAS

Technical networks

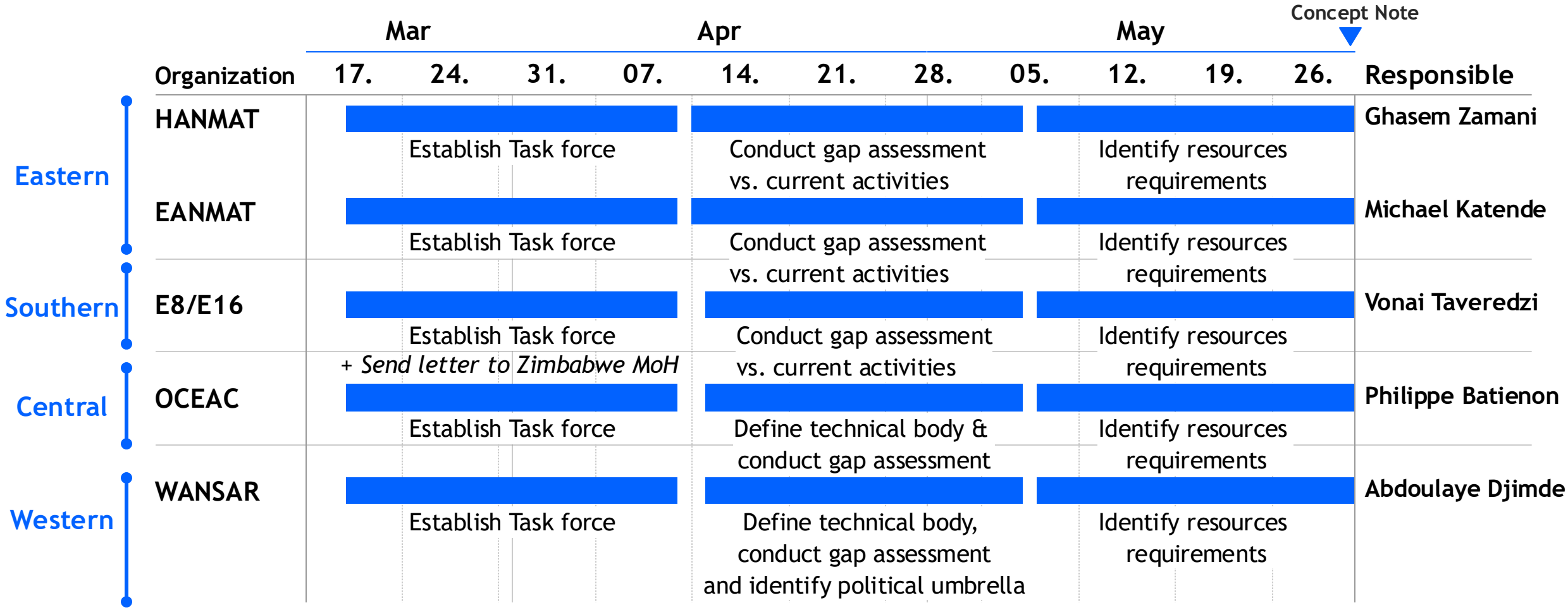
OCEAC & DRC & Burundi

Secretariat = ?

Countries covered

- Chad
- Central African Republic
- Cameroon
- Equatorial Guinea
- Sao Tome and Principe
- Gabon
- Republic of the Congo
- Democratic Republic of the Congo

Roadmap for subregional coordination



This meeting is an important step towards improving coordination of the response to drug resistance in Africa