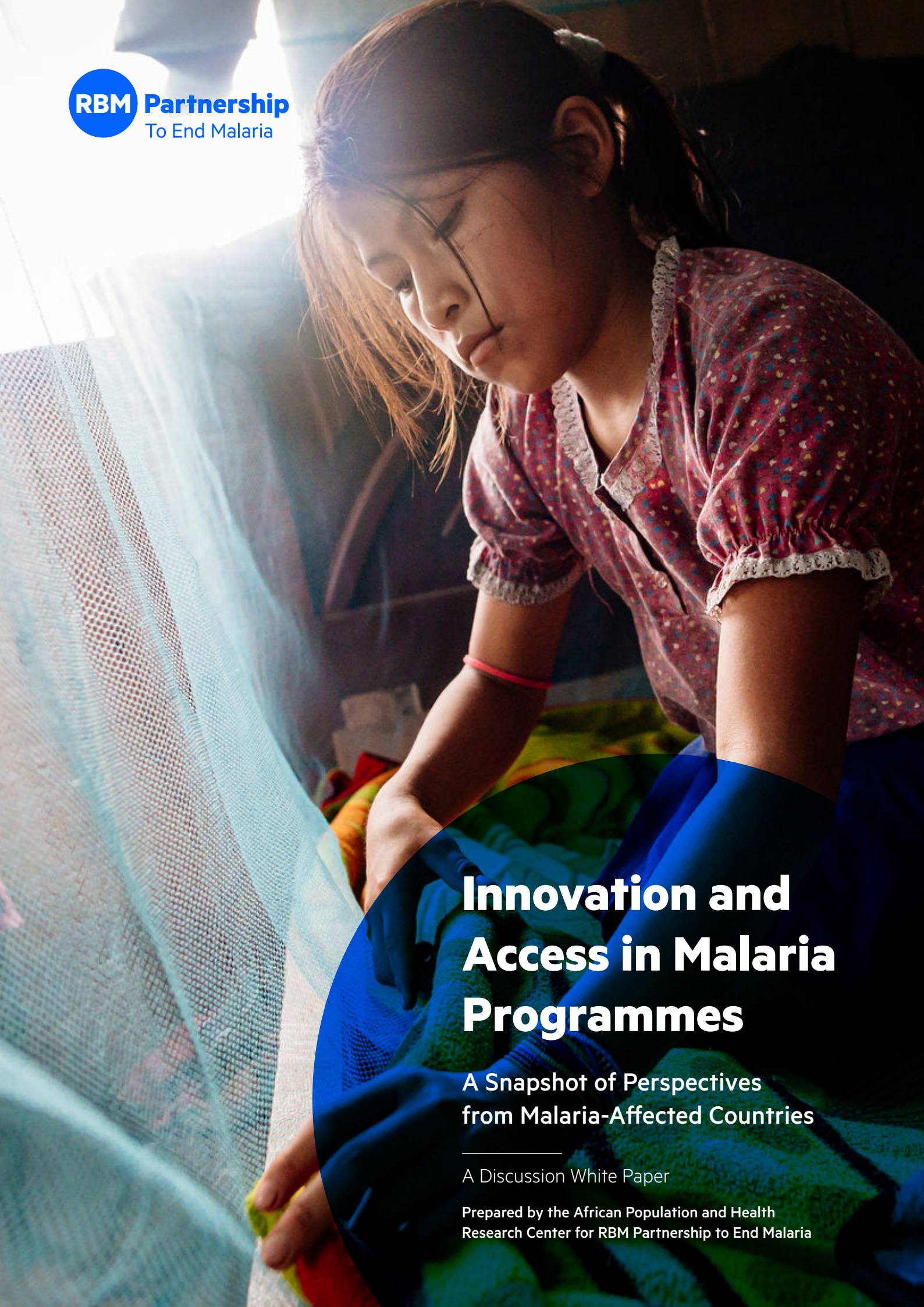

RBM Partnership To End Malaria

Innovation and Access in Malaria Programmes

A Snapshot of Perspectives from Malaria-Affected Countries

A Discussion White Paper

Prepared by the African Population and Health Research Center for RBM Partnership to End Malaria

Innovation and Access in Malaria Programmes

Credits

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Acknowledgements

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Executive summary

In 2019, the major global health agencies united to develop the Global Action Plan for Healthy Lives and Well-being for All to promote the achievement of the Sustainable Development Goals (SDGs), especially SDG 3 (good health and well-being). The plan identified a set of “accelerators” to increase the rate of progress, including one covering research, innovation and access.

SDG 3 specifically mentions malaria as one of the diseases that need to be overcome. There has been tremendous progress in reducing the burden of malaria in the last 20 years. However, since 2015, the rate has slowed. Efforts are now under way to “bend the curve” back downwards. It is clear that introducing new and innovative tools is one way to achieve this and to continue to drive down incidence and disease burden. However, it is important to ensure that innovations are introduced effectively and that investment in them is not wasted. Barriers and challenges to optimal introduction need to be identified and overcome.

There has been much discussion on this topic at a global level, but it is sometimes felt that the voices of local stakeholders in malaria-affected countries are not adequately heard. The challenges and barriers will vary depending on local circumstances in the different countries. An understanding of these local circumstances is therefore essential for the successful introduction of a new tool or programme. To address this issue, RBM Partnership to End Malaria has commissioned studies to identify these barriers and challenges from local perspectives, and obtain recommendations on how to overcome them from stakeholders in malaria-affected countries. This study provides a snapshot from stakeholders in the Africa and Asia-Pacific regions.

This study comprised a series of 42 in-depth interviews with representatives of all stakeholder groups across 14 countries. The interviews were carried out by the African Population and Health Research Center (APHRC), which then analysed the results and drafted the initial version of this White Paper. The findings were supplemented by input from a Steering Group with members from RBM Partnership. The White Paper was revised, with editing support from TropMed Pharma Consulting, and finalized after review by the Steering Committee.

Key findings from the interviews

The opinions expressed by the interviewees can be grouped into five main themes:

Research and development:

- Research is dominated by a global agenda driven by international donors and agencies. Participants did not feel that local voices were adequately heard in setting the research agendas and country-level priorities.
- Local research and development (R&D) are weak due to a lack of financial support from national governments.
- As a result, local opportunities for innovation are not always exploited and innovations may not be fully aligned with local needs.

Deployment

- Interviewees recognized that regulatory processes are often slow, bureaucratic and may create bottlenecks in the timely deployment of innovations.
- Some interviewees see World Health Organization (WHO) prequalification (PQ) as a barrier to innovation due to the time and cost of meeting its requirements. Some expressed the view that this favoured manufacturers in China and India at the expense of local companies.

Policymaking:

- It was felt that national governments need to take greater responsibility for financing and resourcing the health system and malaria programmes, rather than relying on donor funding.
- Policy development needs to involve a wider range of stakeholders, including civil society. Stakeholder mapping is a useful tool to ensure that all stakeholders become involved.
- National policies and donor approaches should be more flexible and able to respond more rapidly to changes in local circumstances.

Scaling-up and availability:

- Weak and fragile supply chains and procurement systems present a significant barrier to the successful implementation of malaria programmes. These systems need to be strengthened to ensure the success of the programmes and the introduction of innovations they need to support.
- Support from national governments to the local industries would also help ensure the availability of new products and tools.

Adoption and access:

- Greater focus on strengthening existing systems could increase the probability of success when introducing new tools and programmes.
- Better data is necessary to support the cost-benefit analysis of new products, which will in turn be used to justify changes to ministries of finance and other agencies and donors.
- It is important to get full buy-in from local communities for new tools, especially ones that communities are not familiar with. Local leaders and opinion leaders are important to ensuring that communication efforts are successful from an early stage. Community health workers can also play an important role in overcoming community concerns and resistance.
- Better collaboration and coordination between different disease programmes helps to ensure that programmes are optimally delivered.

Innovation and Access in Malaria Programmes

Recommendations

Based on these findings and with further input from the Steering Committee, this White Paper makes the following recommendations to help facilitate the development and uptake of innovative new tools:

Optimize access by strengthening existing systems:

- For the successful introduction of innovative interventions, it is important to build on existing systems. These need to be strengthened and optimized. This will ensure that new products do not overburden fragile systems and lead to poor outcomes for the new tool.
- Special attention should be given to procurement systems and the supply chain to avoid bottlenecks and stock-outs, especially when new products are introduced.

Increase acceptance through a multisectoral approach:

- Governments and National Malaria Control Programmes (NMCPs) should more widely adopt multisectoral approaches to planning for the introduction of innovative interventions; this will not only ensure that the plans better reflect the local needs and situation but also foster early buy-in from all stakeholders.
- It is recommended that stakeholder mapping is adopted more widely as a tool to ensure that all stakeholders are identified.
- Particular focus should be placed on the involvement of local communities, for example, through greater involvement of civil society organizations (CSOs) in translating policy into

Strengthen local R&D to meet local needs:

- Local R&D capacity will allow for more tailored and appropriate innovations to be developed. Local opportunities can then be investigated earlier and more quickly than may be possible if research is only through international organizations. Governments will have to consider increasing funding, as well as putting in place appropriate career structures and incentive systems to encourage this.
- It is recommended that NMCPs proactively engage with local research centres to define research priorities and develop appropriate new interventions and training.

Diversify financing sources to increase flexibility:

- National funding levels need to be increased to reduce dependence on donors. This will allow national governments to have greater control over policies and priorities.
- Donors should consider how to structure support to allow greater flexibility for NMCPs in how resources are used and to allow for more rapid changes in response to changing local circumstances.

Background

In 2019, the major global health institutions united to develop the Global Action Plan for Healthy Lives and Well-being for All (1). This is intended to advance collective action to achieve SDG 3 – Good Health and Well-being. The plan has identified seven "accelerators" to increase the rate of progress. Accelerator 5 (R&D, innovation and access) focuses on the need to increase the pace at which affected communities can access new and more effective tools targeted at the major health threats. Importantly, it highlights the importance of ensuring access to new tools. Malaria is specifically mentioned in the SDGs as one of the diseases that need to be overcome to achieve SDG 3.

The global community has embraced the worldwide eradication of malaria, with the adoption by the World Health Assembly in 2015 of the Global Technical Strategy for Malaria 2016–2030 (GTS) (2) and its vision of a world free of malaria. Alongside and complementing the GTS, the Roll Back Malaria Partnership (now the RBM Partnership to End Malaria) published Action and Investment to Defeat Malaria (3) as a framework for putting the GTS into action at a global, national, and local level. Together they have emphasized the need for:

- strengthening multisectoral and international collaboration
- keeping people at the centre of the response
- strengthening the enabling environment
- fostering and sharing innovations and solutions.

Several more recent reports have reinforced these messages. For example, the Lancet Commission on Malaria Eradication report in 2019 (4) and the report of the WHO Strategic Advisory Group on Malaria Eradication in 2020 (5).

There has been tremendous progress in reducing the burden of malaria in recent years. In 2010, globally there were 251 million cases and 585,000 deaths from malaria. By 2018, these had reduced to 231 million cases and 412,000 deaths. But progress has slowed since 2015, with incidence remaining static at 57 cases per 1,000 population at risk. In Africa, the incidence has stalled at around 230 cases per 1,000. If the current trend in incidence is maintained, estimated global malaria case incidence (per 1,000 population at risk) would be 54 in 2020, 48 in 2025, and 42 in 2030, instead of 35, 14, and 6 required to achieve the GTS milestones. The World Malaria Report included an urgent call to "bend the curve" of cases and deaths back on a downward trend. (6)

There have been several initiatives launched since 2015 to address the slowing progress to reduce the burden of malaria, especially in sub-Saharan Africa. Some of these have focused on delivering current tools more effectively (e.g. the WHO High Burden High Impact approach [6])]) and others on the development of new tools and methods. Four bottlenecks that impede access to new tools have been identified:

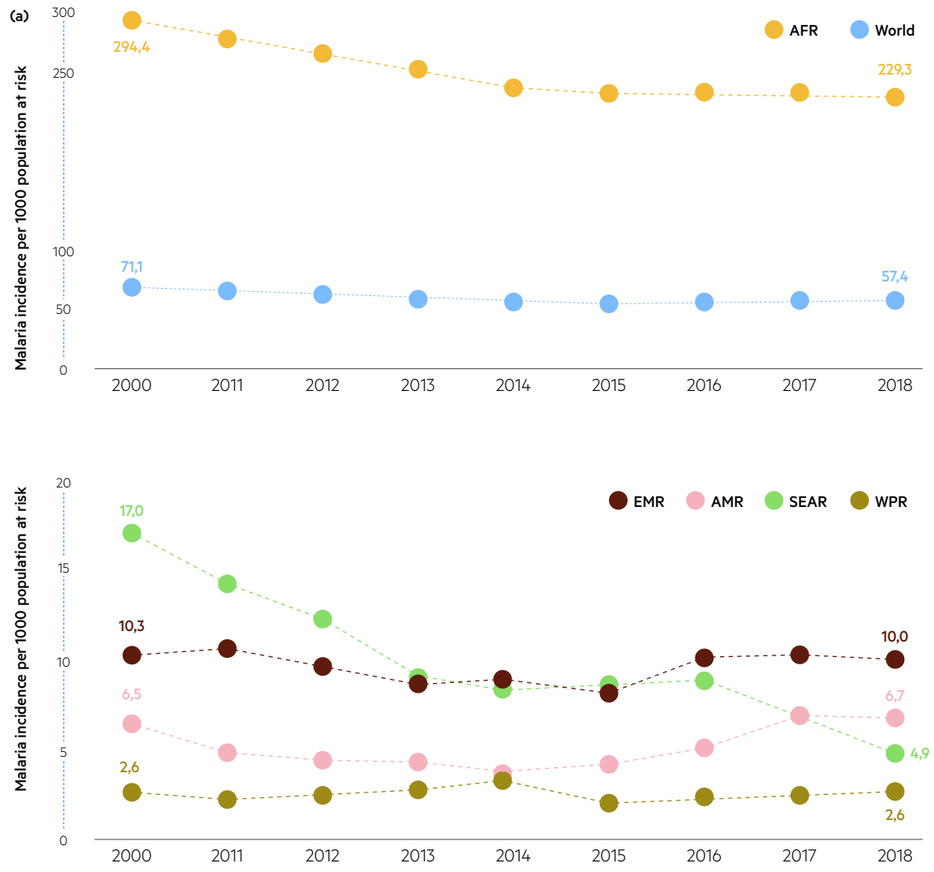
- complex and fragmented international funding sources
- inconsistent PQ and regulatory processes
- inconsistent alignment between central and local regulators
- price-focused procurement and tendering processes.

There has been much discussion on these topics at a global level, but it is sometimes felt that the voices of local stakeholders in malaria-affected countries are not adequately heard. The challenges and barriers will vary depending on local circumstances in the different countries. An understanding of these local circumstances is therefore essential to overcome these bottlenecks and challenges. To address this issue, the RBM Partnership has commissioned studies to identify these barriers and challenges from a local perspective and obtain recommendations on how to overcome them from stakeholders in malaria-affected countries. This study provides a snapshot from stakeholders in the Africa and Asia-Pacific regions.

> *Despite the success in reducing malaria burden between 2000 and 2015, progress in malaria control overall has since stalled, with malaria incidence and mortality relatively unchanged since 2015. Of great concern to us all is that the world is significantly off track to be able to meet the target of a 90 per cent decrease in malaria incidence and mortality by 2030, as articulated in the GTS. This is probably the most important and urgent threat to realizing our vision of a malaria-free world.* (World Malaria Report 2019)"

Figure 1: Trends in malaria case incidence rates

Trends in malaria case incidence rates (cases per 1,000 population at risk) globally and by WHO region, 2010–2018. The WHO European Region has reported zero indigenous cases since 2015.



Source: WHO estimates.

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

Study objectives and methodology

The objective of this qualitative study was to obtain a multi-country snapshot of the major challenges and barriers to introducing innovative new products for malaria. The study is from the perspective of key stakeholders at the country level from a range of malaria-affected countries in Africa and Asia-Pacific. Specifically, the following topics were included in the survey:

1. Access to existing innovations, including drugs and diagnostics.
2. Barriers to taking up and/or scaling up interventions with new tools.
3. Malaria-endemic community involvement in the design, testing and delivery of new innovations.
4. Approaches to demand generation at the community and health system-levels.
5. Involvement of international partners at the local level.

The study involved structured interviews with 42 representatives of various stakeholders across 14 countries. The interviews were carried out by APHRC. Full details of the study methodology can be found in the Annexes. The interview guide is available at [insert url link]. The main limitation of the study is the small number of participants. Caution should be used when generalizing results of this subset of respondents to the whole field of malaria. To mitigate the impact of the small sample size, the most influential and knowledgeable participants were targeted.

APHRC analysed the results and drafted the initial version of this White Paper. The findings were then supplemented by input from a Steering Group with members from RBM Partnership. The White Paper was revised, with editing support from TropMed Pharma Consulting, and finalized after review by the Steering Committee.

Findings

The opinions expressed by the interviewees can be grouped into five main themes.

Research and development (R&D)

- Interviewees noted that R&D in malaria-affected countries, especially in sub-Saharan Africa, remains weak. They felt that this leads to a power differential between local stakeholders and those holding the purse-strings. Research agendas can be unduly influenced by the funders at the expense of the views of the local stakeholders.

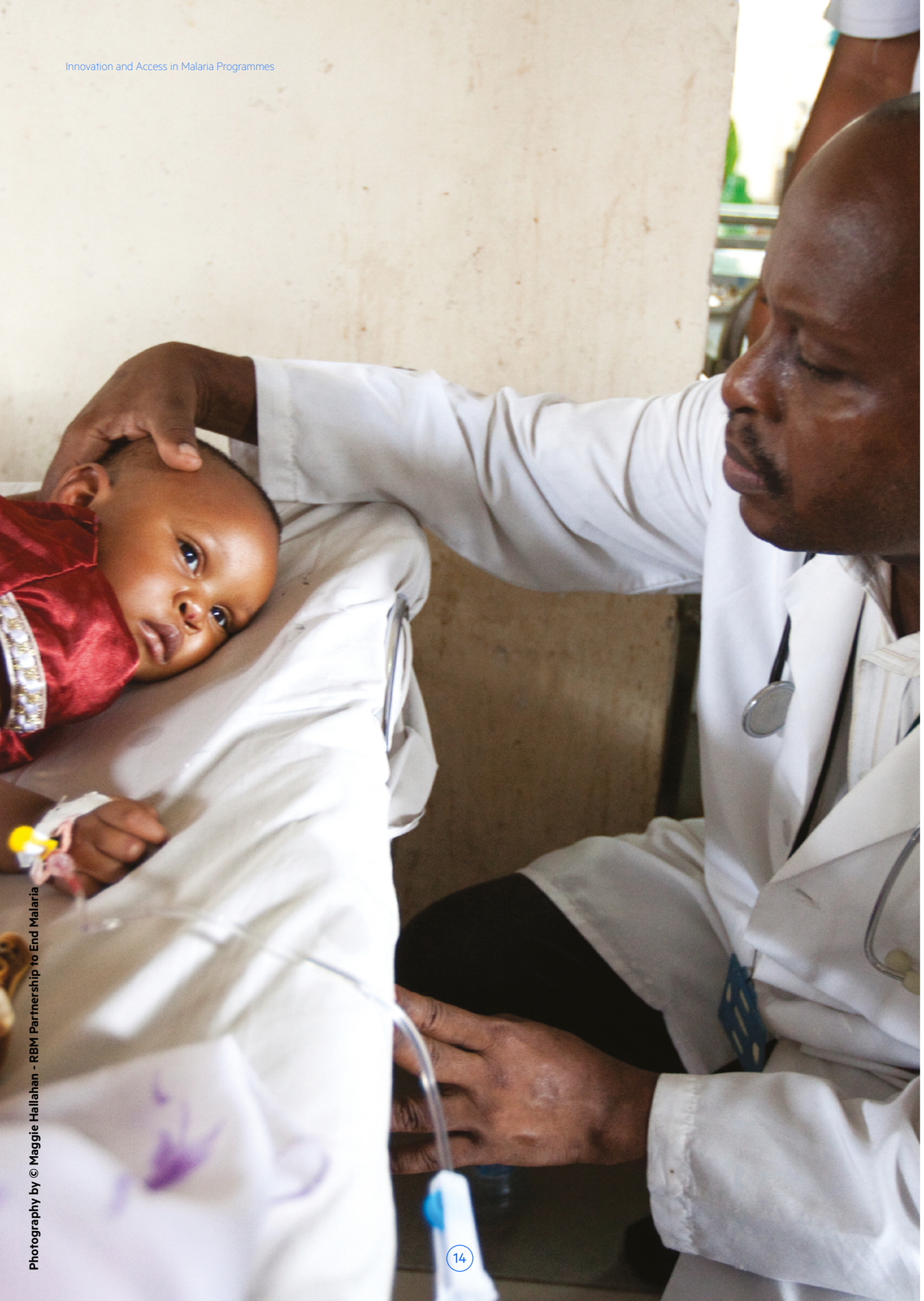
> *The challenge with innovation and trying something new in our [African] countries has to do with who funds it. So until we get to a point where we [Africans] are funding these things on our own, innovation is dead right from the start.*
>
> (Interviewee – Ghana)

- Interviewees also expressed that national governments are often unable or unwilling to properly invest in local R&D and rely on the international donors to fill the funding gap. This also reduces the ability of local stakeholders to influence research agendas.

> *We left the fight (for malaria) to the international organizations, and the biggest budget. It's the international organizations that finance 80–90 per cent. The countries themselves are not doing much for malaria.*
>
> (Interviewee – Burkina Faso)

- Two interviewees felt that external funders did not have a long-enough timeframe for their investments to properly support the development of a robust local or regional R&D infrastructure. Too often grants were relatively short-term (5 years or less), which is insufficient to build strong research centres.
- Equally, these interviewees said that local pharmaceutical companies lacked the resources and expertise to support R&D projects over a long enough timeframe.
- Some interviewees said that in their countries there is often an inadequate mix of research and disease expertise, under-developed infrastructure, and suboptimal capacity– whether this is in building, equipment, staffing or money. Career structures and paths do not necessarily support having the correct range of expertise across all relevant disciplines. As such, it may be difficult to attract and retain good researchers who are being tempted to find positions in other countries, especially in Australasia, Europe or North America.
- This weakness in local R&D capacity means that important research questions – which need to be answered to ensure that new tools are appropriate for each country's circumstances – may not be addressed. For example, appropriate dosing regimens for new drugs that take into account local diet, acceptability of dosage forms or target populations (such as very young children or pregnant women) may be omitted from an R&D programme primarily driven at a global level. Some interviewees felt that there was a lack of adequate research into vector control methods that recognized changing behaviour patterns of the Anopheles mosquito (e.g. outdoor or daytime biting) or the at-risk populations (e.g. adults working in forest areas in Asian jungles).
- Similarly, some interviewees said that weak local R&D adversely affects opportunities to use local resources to find new tools. For example, it was felt that herbal remedies could be a useful source of new drugs against malaria, but these went unrecognized by global funders and needed local government investment to be properly explored.
- Some interviewees suggested areas for new innovations that were needed or could be pursued. Notable examples include, repurposing existing drugs (as with ivermectin), ways of safely repurposing or disposing of insecticide-treated nets, or developing e-Health or e-tracker systems to support local surveillance and monitoring and evaluation data collection.

> *E-tracker, which we have started already in some few districts but we are thinking of expanding nationwide. It captures each pregnant woman, gestation period, when she started the first dose [of Intermittent Preventative Treatment in Pregnancy] so that we will know at any given time which pregnant woman is due or is due for a particular dose and not necessarily on the register and then we can be able to actually get that data.*
>
> (Interviewee – Ghana)



Photography by © Maggie Hallahan - RBM Partnership to End Malaria

Deployment

- A key challenge noted by 12 respondents (two-thirds from Francophone West Africa and mostly NMCP managers) to the deployment of new interventions, especially drugs, is the speed at which they can progress through the regulatory approval process in each country. Several respondents noted that national regulatory systems seemed to be unduly bureaucratic and time-consuming. Bottlenecks at this stage are common. One interviewee suggested that national regulatory agencies should try to leverage the resources of "mature" agencies in more well-resourced countries to free up resources locally. These resources could then be focused on locally important issues, such as regulatory compliance and tackling substandard products.

- The WHO PQ system was mentioned as a barrier to innovations due to the time and cost of achieving PQ status. Two interviewees felt that reliance on WHO PQ by global donors and agencies, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria, resulted in local manufacturers being excluded from the market, to the benefit of manufacturers in China and India.

Policymaking

- Six respondents (five from West Africa) mentioned the "lack of goodwill" at the national government level to fund and allocate other resources to support these plans. Governments were too reliant on donor funding to support these health-care programmes.

- Six interviewees from CSOs recommended greater use of stakeholder mapping when drawing up plans, so that all the relevant groups could be involved in the planning. This would also help with the subsequent communication of those plans, effectively and in a timely manner to all affected groups.

- The CSO interviewees were particularly keen to stress the importance of engaging with civil society when drawing up national strategies and plans. This would ensure proper focus on local needs and the facilitate their acceptance by the affected populations. The United Republic of Tanzania's National Strategic Plan for Malaria 2014–2020 was mentioned as an example of good practice.

- Five interviewees from across Africa mentioned that national policies needed to be flexible and responsive to the changing patterns of resistance to insecticides and drugs in their countries. Interestingly, none of these were NMCP managers.

- The interviewees from Papua New Guinea specifically raised the need to develop a clear and practical policy for the use of glucose-6-phosphate dehydrogenase testing before treatment with 8-aminoquinolines. This was an example of an enabler that should be in place before the introduction of a new tool, in this case tafenoquine.

Scaling-up and availability

- Several interviewees noted that the fragility of local and national procurement and supply chain systems present a significant barrier to the successful introduction of an innovation. Poor demand management systems will result in stock-outs, missing key dates for implementation associated with the local malaria seasons, and a lack of coordination with associated communication campaigns.
- It was suggested that availability of all products, including innovations, could be improved by better support and investment by governments in local industry.

Adoption and access

- There was general agreement from interviewees that greater focus is currently needed to overcome the challenges to implementing existing interventions. This covered all aspects of implementation (e.g. supply chain, financing, staffing, communications, monitoring and evaluation, and surveillance). Getting these right at the present stage was one of the most important keys to successfully introducing new tools and programmes as they became available. One interviewee explicitly mentioned the need to properly prepare health systems to introduce innovations.
- Several interviewees mentioned that the fact that innovations are more expensive than existing interventions is a key challenge to their adoption. The additional cost would need to be justified to those who held the purse-strings (e.g. ministries of finance). There was a lack of timely and complete data to support evidence-based policymaking, making it difficult to make the case for change. One interviewee from Ghana specifically mentioned that international donors (such as the Global Fund) seemed to have a higher threshold of evidence to support changes to the agreed strategy or tools than what was required at the national level.
- One interviewee illustrated the lack of flexibility in the current funding process with the timetable for a Global Fund grant. Applications for a grant to cover 2021–2023 need to be agreed in 2020 (which probably means starting to plan them in 2019). This means that the adoption of a new tool or other changes cannot be implemented before 2024, even if the need for the change is recognized in 2021 or 2022.
- Interviewees mentioned that the uptake of new interventions and tools greatly relies on their acceptance by the target communities. Respondents from Ghana highlighted the successful introduction of the RTS,S vaccine as part of the Malaria Vaccine Implementation Programme to illustrate the issues and how they can be overcome:
    - The need for training and capacity-building of the necessary staff to implement the programmes.
    - Attention to community attitudes, religious beliefs and external influencers.
    - Anxiety about any new intervention, especially when targeted at young children.

    One interviewee also mentioned the use of genetically modified mosquitoes as another example of a major upcoming innovation that could need to gain community acceptance before being introduced.
- The interviewees widely recommended the importance engaging local opinion leaders, community and religious leaders, and the local media early on in the successful introduction of a new intervention.
- They also stressed the importance of community health workers in the successful execution of programmes against malaria, along with the need to properly support, train and incentivize them.
- The interviewees generally felt that high quality and well-resourced behaviour change communication and information, communication, education campaigns are important to pre-empt any concerns from the communities and address objections to the new intervention. These should be in the local language and take into account local practices and customs. Examples of best practice, such as "Ziro Malaria Inaanza na Mimi"[1] in the United Republic of Tanzania and the involvement of CSOs in its development were mentioned. Several of the Ghanaian interviewees recognized the value of this to the successful introduction of the RTS,S vaccine in Ghana.
- Five interviewees from West Africa mentioned that inappropriate product design could be a barrier to community acceptance. at least one interviewee mentioned the example of some communities seeing sleeping under a white insecticide-treated nets as being like under a funeral shroud.

1 Swahili: "Zero Malaria starts with Me."

Discussion

Many of the findings in the previous section will not be surprising to readers well-versed in the world of malaria. This section collects the additional observations of Steering Committee members and therefore supplement the findings. Together, they form the basis on which the recommendations were developed.

Research and development (R&D)

Innovation is an expensive, resource-intensive, and long-term exercise. It is therefore important that such investment is not wasted or used less than optimally through ineffective or ineffectual deployment and implementation of innovations. At present, much of the major research into innovative new tools is funded through international donors; it is therefore important to show that their investment has been used effectively when the resulting products become available. Not to do so risks donors shifting their investment to other initiatives where they anticipate better results.

R&D is an essentially collaborative undertaking, bringing together expertise from around the world and from a range of relevant disciplines. In the past, North-South cooperation was predominant, but recently there has been more South-South cooperation. The development of the RTS,S malaria vaccine has shown both the need and the value of strong collaborations and the benefit in building strong centres of excellence in Africa to support R&D into innovative malaria tools. While such centres exist in Africa, these are predominantly funded by international donors (e.g. the Wellcome Trust, the United States Agency for International Development).

The weakness in R&D capacity in Africa has long been recognized. In 2007, African Union countries committed to investing at least 1 per cent of gross domestic product in R&D[2]. This commitment recognized the importance of R&D to sustainable development and the necessity to address Africa's health needs. Yet this goal has remained unrealized. Across sub-Saharan Africa, the average share of gross domestic product devoted to R&D activities was only 0.4 per cent in 2015 (7). In a 2019 publication, Simpkin et al. investigated the factors limiting health R&D in Africa; they identified substantial disparities across the continent, reflected by the following metrics: university rankings, number of researchers, number of publications, clinical trials networks and pharmaceutical manufacturing capacity (8).

There have been a number of efforts to address some of these R&D challenges. In 2011, 38 African centres from across the continent were recognized as African Network for Drugs and Diagnostics Innovation Centres of Excellence in health innovation. This has established an alliance of African institutions with the expertise and resources to advance health innovation and to encourage intra-African, South–South and North–South networking and cooperation (9). In South Africa, the Drug Discovery and Development Centre at the University of Cape Town was established in 2010 and has taken a novel antimalarial into late-stage development (10).

Deployment

The duplication and bottlenecks caused by the multiplicity of regulatory agencies across Africa identified by some interviewees has also been well recognized. There has been a gradual move towards African Medicines Regulatory Harmonization and the establishment of an African Medicines Agency under the auspices of the African Union. However, progress is still slow – although the COVID-19 pandemic has injected some sense of urgency (11).

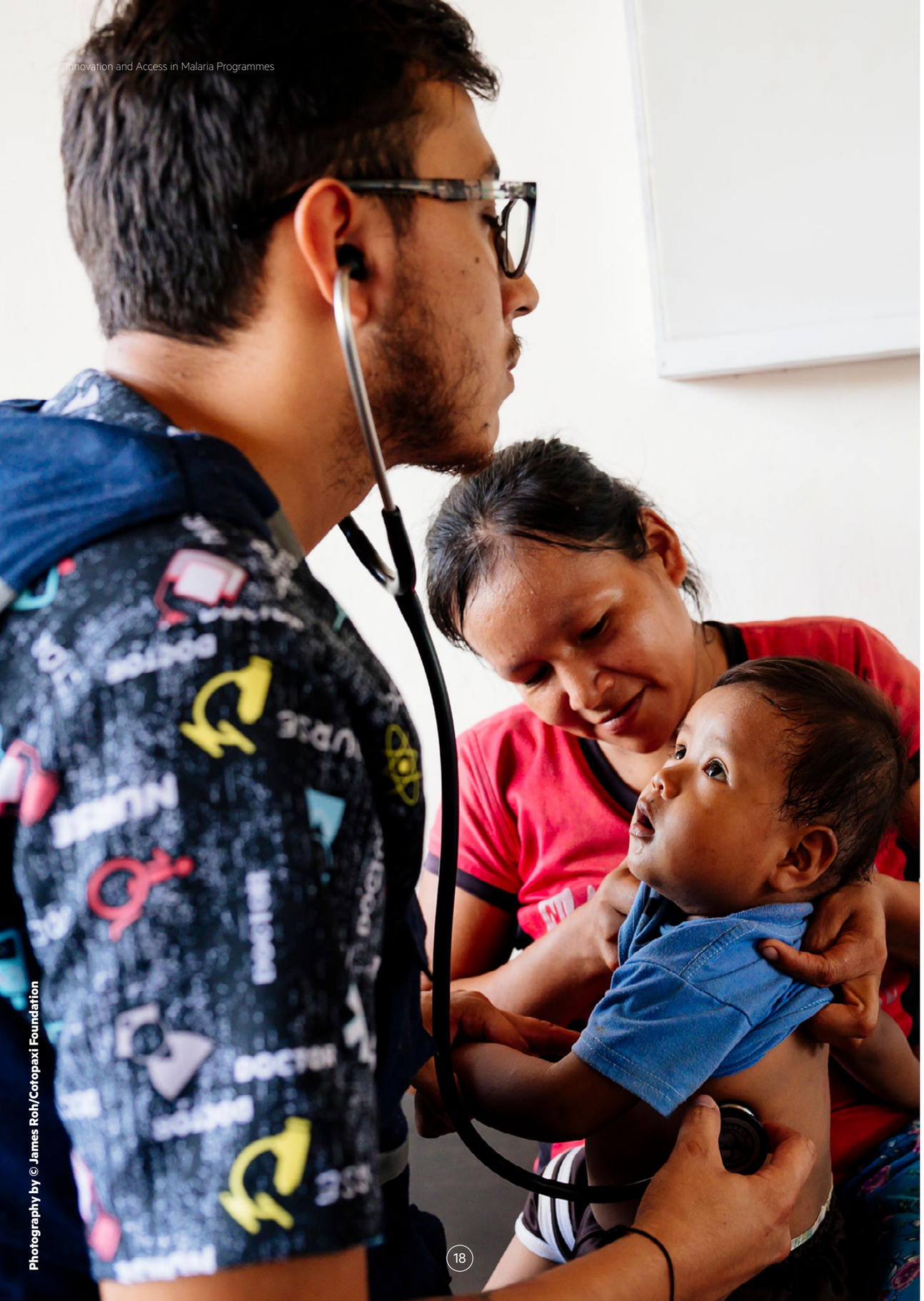
Policymaking

Globally, the strategies and policies for malaria are well established and based on the GTS and Action and Investment to Defeat Malaria.

Most malaria-endemic countries have fairly robust national malaria strategies, in part because they are needed to access donor funding, for example, from the Global Fund. However, the challenge is often being able to put them into practice, given all the challenges identified in this study

Interviewees, especially from CSOs, strongly recommended bringing all stakeholders into the planning of national and local malaria strategies. A multisectoral approach has been recommended for many years (12), so it is informative to see this issue still being raised

2 This figure includes all forms of R&D, not just biomedical



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Adoption and access

The nature and requirements of funding agencies, as well as their grant application timetables, has been recognized as an obstacle to rapid responses to changing local circumstances. However, given that it was raised by some of the interviewees, it is clear that there is still a need for more flexibility and responsiveness from funders.

The importance of CHVs has been recognized for many years (13), but the issues mentioned in the interviews still remain in many countries (14).

Co-ordination between different disease programmes could also be improved. Examples such as the distribution of ITNs at ante-natal clinics to pregnant women is one example. Another is getting national reproductive, maternal and child health (RMCH) programmes to take ownership of the Intermittent Preventative Treatment in pregnancy (IPTp) intervention as this would improve co-ordination and delivery (15). The value of collaboration between disease programmes both in extending the reach of malaria programmes and in building better health care systems generally still needs to be fully exploited.

Recommendations

Based on the interview findings and the further inputs of the Steering Committee, this White Paper makes the following recommendations:

Optimize access by strengthening existing systems:

- For the successful introduction of innovative interventions, it is important to build on existing systems. These need to be strengthened and optimized. This will ensure that new products do not overburden fragile systems leading to poor outcomes for the new tool.
- Special attention should be given to procurement systems and the supply chain to avoid bottlenecks and stock-outs, especially when new products are introduced.

Increase acceptance through multisectoral approach:

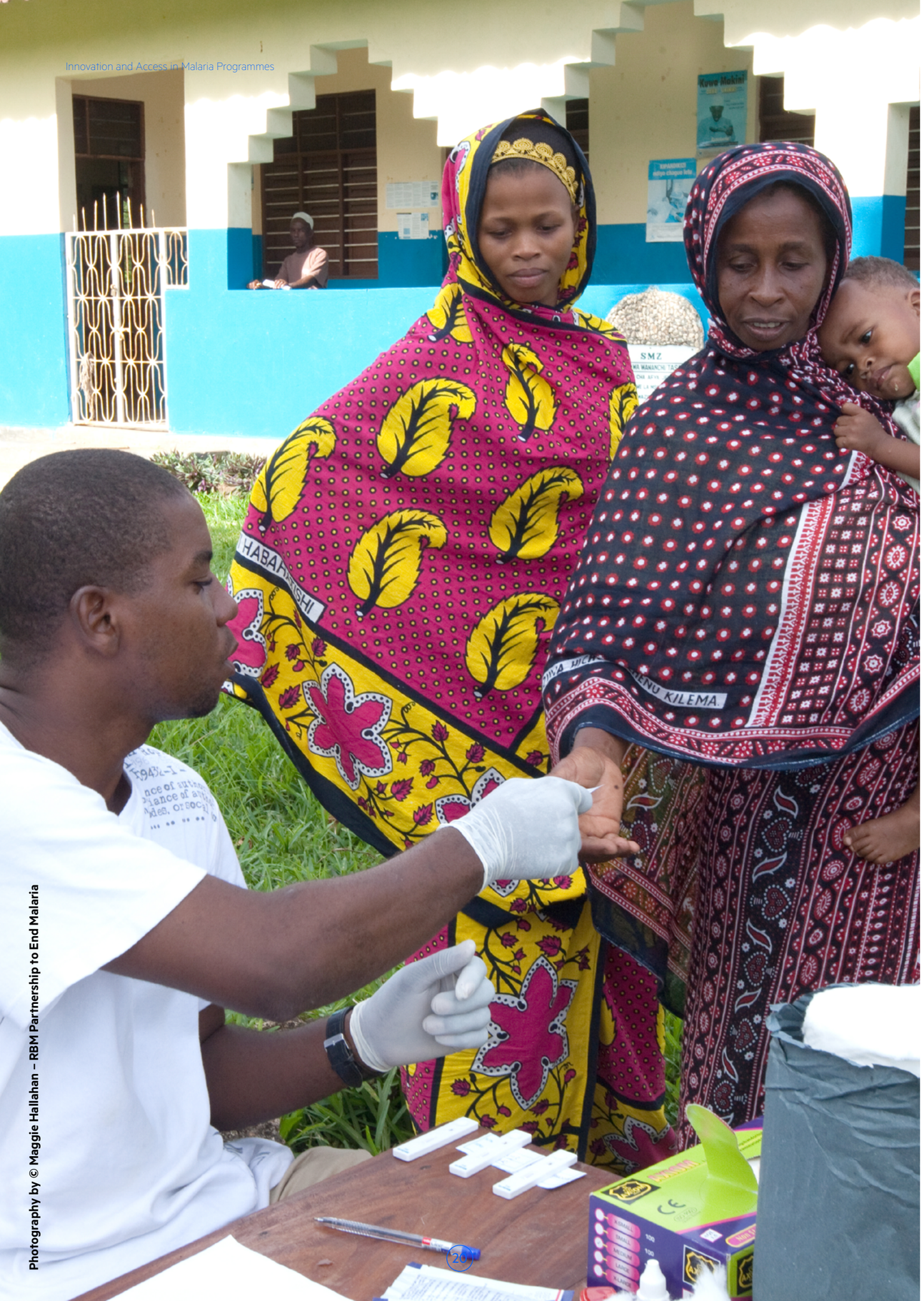
- Governments and NMCPs should more widely adopt multisectoral approaches to planning for the introduction of innovative interventions; this will not only ensure that the plans better reflect the local needs and situation but also foster early buy-in from all stakeholders.
- It is recommended that stakeholder mapping is adopted more widely as a tool to ensure that all stakeholders are identified.
- Particular focus should be placed on involvement of local communities, for example, through greater involvement of CSOs in translating policy into practice.

Strengthen local R&D to meet local needs:

- Local R&D capacity will allow for more tailored and appropriate innovations to be developed. Local opportunities can then be investigated earlier and more quickly than may be possible if research is only through international organizations. Governments will have to consider increasing funding, as well as putting in place appropriate career structures and incentive systems to encourage this.
- It is recommended that NMCPs proactively engage with local research centres to define research priorities and develop appropriate new interventions and training.

Diversify financing sources to increase flexibility:

- National funding levels need to be increased to reduce dependence on donors. This will allow national governments to have greater control over policies and priorities.
- Donors should consider how to structure support to allow greater flexibility for NMCPs in how resources are used and to allow for more rapid changes in response to changing local circumstances.



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Annexes

Study methodology

The study sought to explore the perspectives of different country-level stakeholders and stakeholder groups on innovations and tools to end malaria – focusing on the challenges related to developing and adopting innovations, as well as existing and new opportunities to innovate for malaria. An exploratory qualitative design employing a semi-structured study guide was employed in carrying out the interviews.

Development of the interview guide

An interview guide in English and French was developed by the research team from the African Population and Health Research Center (APHRC) and reviewed and approved by the Steering Committee. The study guide was revised following a pilot exercise, in an effort to improve the validity of the data to be collected. The English and French versions of the guide are appended (see Appendix 1).

The guide included key sections that focused on the development and adoption of malaria tools; the availability and access to these tools in malaria-endemic communities; the challenges to implementing interventions with new innovations (including legal, policy and logistics); and opportunities for innovation for tools, implementation strategies and engagement with malaria-endemic communities in malaria control.

Potential challenges in the roll-out of the RTS,S vaccine were explored, mainly in Ghana, a country involved in the pilot adoption studies. The policy and implementation of glucose-6-phosphate dehydrogenase deficiency testing before treatment with 8-aminoquinolines was explored for Asia-Pacific and the Greater Mekong Subregion countries.

Identification of potential interviewees

Study countries were proposed by the research team from a list provided by the RBM Partnership to End Malaria Steering Committee. The selected countries were reviewed and approved by the Steering Committee. A total of 11 countries were included:

Anglophone Africa: Ghana, Sierra Leone and the United Republic of Tanzania

Francophone Africa: Burkina Faso, Côte d'Ivoire, the Democratic Republic of the Congo and Senegal

Asia Pacific: India and Papua New Guinea

Greater Mekong Subregion: Cambodia.

Thereafter, an initial list of potential respondents was provided for each country by the Steering Committee.

The study team approached, invited and recruited key stakeholders from the National Malaria Control Programmes (NMCPs) and programme implementers from key agencies, national and international partners, and medical and drug/pharmaceutical regulatory authorities. Participants were invited to suggest individuals in their circles and organizations who were well-placed to provide relevant information for the study. Table 1 summarizes the selection and distribution of potential study respondents across the five regions and by stakeholder group.

Potential respondents were identified together and agreed upon with the Steering Committee. Emails and – where possible – phone calls were made to encourage these individuals to participate in the study. In mobilizing the individuals, an introduction letter from the RBM Partnership, together with a summary of topics from the study guide, were shared.

Interviews

Interviews were conducted virtually through phone calls, Zoom, Skype and WhatsApp platforms. To maximize the benefit of the assignment, a French-speaking social scientist led the interviews in Francophone Africa. The interviews were recorded, transcribed verbatim in the languages they were conducted in and translated to English. Researchers took notes and kept a journal of entries during the interviews. A table showing the respondents by stakeholder group and geographic spread is included below.

Development of the recommendations

Following the interviews, a draft report was submitted to the Steering Committee for its input. The Steering Committee were then able to bring their knowledge and expertise to the discussions of the draft. Several rounds of discussion fed into the final report and its recommendations.

Challenges and qualifications

- Although every effort was made to ensure that the interviewees were as representative of the target groups as possible, inevitably there may be some bias in the results due to the people interviewed.
- Interviews were conducted at a time when most of the target participants, drawn mostly from government agencies including the NMCPs, were busy with their country response to the COVID-19 pandemic. As a result, the research team experienced delays in securing appointments with the target individuals or had dates and times for confirmed interviews postponed or pushed forward. This situation delayed the agreed timelines for the interviews, and some interviews were never completed.
- As is typical of virtual and phone interviews, some technical and network hitches were encountered that affected the communication with the respondents. Nevertheless, every effort was made to ensure a clear line of communication was achieved, including rescheduling interviews and/or changing the platform of communication.

Study participants by stakeholder group

Region	Country	NMCP managers	Implementers	Pharma companies	Malaria surveillance	Regulatory agencies	Global & regional regulators	Research & academia	Total
Anglophone Africa	Tanzania	-	2	-	-	-	-	1	3
	Ghana	1	-	2	1	1	1	2	8
	Sierra Leone	1	-	-	-	-	1	-	2
	Nigeria	-	-	-	-	-	1	-	1
	Uganda	-	-	-	-	-	1	-	1
Francophone Africa	DR Congo	1	2	-	-	-	-	1	4
	Senegal	2	1	-	-	-	-	-	3
	Burkina Faso	1	3	-	-	-	2	1	7
	Côte d'Ivoire	1	2	1	-	-	-	1	5
Asia Pacific	India	1	1	-	-	-	1	-	3
	PNG	1	1	-	-	-	-	-	2
	Viet Nam	-	-	-	-	1	-	-	1
	Australia	-	-	-	-	1	-	-	1
USAID					1				
TOTAL		9	12	3	1	4	7	6	42

Abbreviations: DRC, the Democratic Republic of the Congo; PNG, Papua New Guinea; USAID, the United States Agency for International Development.

Abbreviations

ACSM	Advocacy Communication Social Mobilization
AIM	Action and Investment to Defeat Malaria
AMA	African Medicines Agency
AMRH	African Medicines Regulatory Harmonization
ANDI	African Network for Drugs and Diagnostics Innovation
APHRC	African Population and Health Research Center
ARMPC	Advocacy and Resource Mobilization Partner Committee
BCC	behaviour change communication
CHW	community health worker
CSO	civil society organisation
FIND	Foundation for Innovative New Diagnostics
G6PD	glucose 6-phosphate dehydrogenase
GAP	Global Action Plan for Healthy Lives & Well-being for All
GDP	gross domestic product
Global Fund	Global Fund to fight AIDS, Tuberculosis and Malaria
GTS	Global Technical Strategy for Malaria
H3D	Drug Discovery and Development Centre
HBHI	High Burden High Impact
ICE	information, communication, education
IPTp	Intermittent Preventative Treatment in Pregnancy
ITN	Insecticide Treated Net
IVCC	Innovative Vector Control Consortium
M&E	monitoring and evaluation
malERA	Malaria Eradication Research Agenda
MMV	Medicines for Malaria Venture
MVIP	Malaria Vaccine Implementation Programme
NMCP	National Malaria Control Programme
PDP	Product Development Partnership
PQ	prequalification
R&D	Research and Development
RBM	RBM Partnership to End Malaria
RMCH	reproductive, maternal, and child health
SAGME	Strategic Advisory Group on Malaria Eradication,
SDGs	Sustainable Development Goals
SSA	sub-Saharan Africa
USAID	United States Agency for International Development
WHO	World Health Organization

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