Summary

On 30 November – 1 December 2017, the WHO Strategic Advisory Group on malaria eradication (SAGme) convened for its third meeting in New Delhi, India. The third SAGme meeting included seven committee members, supported by WHO Collaborating Centres and other key stakeholders, including observers from industry (Novartis), other UN agencies (UNICEF) and the WHO Secretariat (Global Malaria Programme [GMP]). The meeting’s objectives included reviewing progress on the work packages, providing guidance and course corrections, and determining next steps. Major discussion points included i) understanding key determinants that will lead to malaria eradication; ii) learning from past and present models to improve estimates of the costs to eradicate and how to finance the effort; and iii) identifying the components of community engagement and health systems necessary to form the basis of an eradication effort. The SAGme also discussed the format of the final product that needs to be provided to the Director General (DG) and Executive Board (EB).¹

The following meeting report outlines the key outcomes and points of discussion pertaining to the seven work packages presented. Supporting documents and presentations (PDFs) can be downloaded from the Dropbox link. These materials complement the background sections and support key points addressed during the meeting. If you have problems accessing or downloading the files, please contact the GMP Secretariat and we will send them to you.

At the closing session, the key outcomes of the third meeting of the SAGme were identified as:

- Timelines for the conclusion of the work packages and adoption of the changes discussed.
- Agreement on the need to map out the various pathways that could be taken to support an eradication campaign, including political mapping. GMP will map out the potential timing of regional resolutions in conjunction with the Regional Offices.
- Organization of a task force meeting with several work package leaders to present and discuss close-to-final products (to be held in June 2018).

¹ UPDATE received at the end of December 2017: On behalf of the Department for Governing Bodies, the SAGme will not have to report to the EB and will only report to the Director General of WHO. A progress report from WHO/GMP will be presented to WHA72 in which additional information can be provided.
- Agreement to hold a final SAGme meeting by Q1 2019 for which final products and recommendations would be adopted for presentation to the DG.

**Background**

In August 2016, WHO’s GMP convened the [inaugural SAGme meeting](https://www.who.int/malaria/news/2016/08/22/malaria-strategic-advisory-group-meeting-inaugural/en/). Thirteen eminent experts representing a range of disciplines and geographies were selected as members, supported by representatives from WHO collaborating centres, WHO staff, and other key stakeholders. The [Terms of Reference](https://www.who.int/malaria/news/2016/08/22/malaria-strategic-advisory-group-meeting-inaugural/en/) for the SAGme is to advise the Organization on the relevance, potential strategies and costs of malaria eradication over the next decades through a process of analysis and discussion. Over the course of a second meeting in February 2017, the SAGme reviewed presentations on two work packages developed by GMP, i.e., on health systems and economics, and outlined and discussed the scope of work for five additional work packages to be further developed by GMP and SAGme members and presented at the November 2017 meeting.

**Meeting opening**

The third SAGme meeting opened with a welcome from Dr Soumya Swaminathan, member of the SAGme and former Director of the Indian Council of Medical Research (ICMR). During a transitional period, Dr Swaminathan, recently appointed Deputy Director-General for Programmes at WHO, expressed the crucial need for the international research community to discuss new tools, surveillance and guidance for elimination, as well as the need to broaden our horizons through a multisectoral approach as we transition into a universal health coverage-driven WHO administration aimed at fighting disease burden as a whole. Dr Swaminathan was joined by the Chair of SAGme, Dr Marcel Tanner, who stressed the importance of the group progressing in its work towards a more defined and *almost* concluded work in the coming year.

**Updates from the GMP**

The GMP Director welcomed the group to Delhi and reviewed other malaria-related activities that had taken place around the SAGme meeting that week in Delhi. These included: a “Technical meeting on malaria elimination in the South-East Asia Region”, where participants discussed the regional action plan for a malaria-free region by 2030; a “Ministerial declaration on accelerating malaria elimination efforts; and a High-level roundtable and leadership discussion”.

The GMP Director noted that, despite unprecedented progress in reducing malaria morbidity and mortality in recent years, challenges remain, as data from the [World malaria report 2017](https://www.who.int/malaria/publications/world-malaria-report-2017/en/) showed that progress had stalled amidst signs of scarce investment. If this trend continues, WHO will fail to achieve its target of a 40% reduction in case incidence and mortality by 2020, as agreed in the [Global Technical Strategy for Malaria 2016–2030](https://www.who.int/malaria/publications/world-malaria-report-2017/en/) (GTS) adopted by the [World Health Assembly in May 2015](https://www.who.int/malaria/publications/world-malaria-report-2017/en/). However, more and more countries are approaching elimination and the GTS goals around elimination remain possible.
1. Lessons from previous eradication efforts

**Chair:** Dr Soumya Swaminathan; **Presenter:** Dr Kim Lindblade; **Discussant:** Dr Pedro Alonso

**Supporting documents:**

- Lessons for malaria from the eradication of smallpox – Dr Justin Cohen, Clinton Health Access Initiative, Inc. (CHAI)
- Lessons for malaria from previous eradication efforts: Guinea worm (dracunculiasis) – Dr Kim Lindblade, GMP

Reviews of lessons learned from the eradication efforts for smallpox and dracunculiasis (Guinea worm) were presented. The areas covered in the reviews included political support, funding, community support, international coordination and fostering innovation. Several important lessons were identified based on the successful eradication of smallpox. Smallpox eradication was launched despite the failure to achieve universal political support and without a surge in funding at the start of the programme. The majority of funding came from domestic budgets, and the cost–effective allocation of those resources was considered to have been more important than the actual amount. Early on, regional elimination efforts were recognized as important in order to prevent ‘ping-pong’ cases. Although WHO coordinated the effort, eradication of smallpox was ultimately considered the result of a collection of individual national elimination programmes working out their own problems in their own ways. Several critical tools and strategies were developed as a result of the challenges faced by eliminating countries. Finally, no one was convinced that the smallpox effort would be successful until it actually was.

The call for eradication of dracunculiasis came after the successful eradication of smallpox. Due to the low prevalence of the parasitic infection, political support was considered critical, as several heads of state, including United States President Jimmy Carter, became champions of dracunculiasis eradication. Funding for dracunculiasis eradication has come from a number of sources, mostly private. The level of community engagement in dracunculiasis eradication has been exceptionally high, with interventions being largely community-based. International coordination has been led primarily by The Carter Center, although WHO takes the lead in certifying that countries are free of Guinea worm. The eradication effort has produced several important innovations: straw water filters, case containment centres and the use of cash rewards.

SAGme members appreciated the work that had been done to review the smallpox and dracunculiasis eradication efforts, and looked forward to the review on polio eradication (yet to be completed). There was a suggestion to highlight more information on the launch conditions (e.g., number of countries that had already eliminated, global burden, whether the right tools were already available, political will, financial resources) and to compare them with the current malaria situation. SAGme members also suggested highlighting the role of surveillance in each effort, as well as the late failures in each disease, particularly smallpox, as a way to reassure the malaria community that late failures do not necessarily equate to losing the eradication effort.
2. Community engagement

Chair: Dr Soumya Swaminathan; Presenter: Ms Asiya Odugleh-Kolev; Discussant: Dr Alex Coutinho

Supporting documents:
- Community engagement framework

Successfully halting the transmission of malaria and achieving elimination/eradication ultimately relies on how well the malaria programme engages, builds trust and works alongside local communities. The challenge of scaling up and replicating effective approaches for community engagement (CE) is common to all disease programmes, as well as to health systems across low- and high-income countries.

The approaches and interventions for engaging communities across a range of communicable disease programmes have typically been characterized as either “top-down” and expert-led or “bottom-up” and community driven [1]. There has been an increasing call for combined approaches that are able to accommodate both top-down and bottom-up perspectives and agendas.

Evidence shows that community participation and accountability in health service delivery and health research can lead to improved health outcomes [2]. Emerging evidence also suggests that community mobilization can be a cost-effective way to substantially reduce mortality and improve the health of newborn infants, children and mothers [2]. It can also improve the quality of health services to meet community needs. Broader civil society engagement and action has been found to influence health care quality, access and social determinants of health [2]. So far, CE has played only a marginal role in malaria control programmes [3].

In March 2017, WHO/HQ Department of Service Delivery and Safety (SDS) and AFRO/Health Promotion and Social Determinants Unit (HPD) convened a technical workshop. The task for the group was to develop a CE framework for quality, people-centred and resilient health services that could integrate and mainstream engagement within public health practice. WHO committed to sharing the CE framework with health programmes in order to identify opportunities for piloting and validating with countries, recognizing that this process would need to be undertaken for several programmes (malaria, immunization, maternal neonatal child and adolescent health) in different contexts and health systems over the coming years.

Given the broad nature and scope of the CE framework, and in the absence of a malaria-specific CE framework, GMP/SDS in collaboration with the University of Indiana intend to adapt and test the CE framework through the lens of malaria control and elimination. The CE work package, objectives, milestones and activities were presented.

The group felt that the work presented was very instructive and agreed that CE was indeed a crucial component to consider in the context of the main malaria elimination strategies, with wider benefits for the Sustainable Development Goals and beyond. There was broad consensus on the strong linkage between communities and surveillance and how traditional methods of engagement need to be challenged in order to foster trust and respect between the health sector and communities, and between communities and their governments.

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The discussion centred around previous efforts and lessons learned on how to engage with communities, particularly through UNICEF’s long history of community-led and community empowerment approaches through behaviour change and communication-for-development (C4D), and through the experiences of programmes for other diseases such as polio. More recently, the Global Fund, UNICEF and USAID have been focused on strengthening community health systems.

University of California, San Francisco (UCSF) is also conducting a qualitative study to determine the current and potential role of CE in malaria elimination across various health and development sectors. The study will examine current practices to promote CE, exploring perceptions and experiences of engagement across communities, programmes, funding bodies and researchers in multiple countries and programmes.

SAGme participants recognized that how communities were engaged was often context-specific, depending on the nature of the interventions and existing levels of trust between health services and communities. It was acknowledged that combining the CE and health systems readiness work packages could offer an opportunity to develop a comprehensive and comparative synthesis through which to better understand readiness and requirements to engage from the perspective of both communities and health systems. Consequently, SAGme members supported the idea of synergistic approaches to explore the continuum of engagement from communities to health systems. Accordingly, the CE work package team will work closely with the health systems readiness work package.

The methodology for field-testing the CE framework will be developed at a technical meeting to which UCSF and UNICEF will contribute. It was agreed that the first technical meeting should be held in Kigali, Rwanda, and that a second country assessment should be conducted where malaria has been successfully eliminated through strong community support and participation (e.g. Sri Lanka).

3. Health systems readiness to support malaria eradication

Chair: Dr Alex Coutinho; Presenter: Dr Abdisalan Noor; Discussant: Dr Marcel Tanner, stepping in for Dr Lindiwe Makubalo

Supporting documents:
- Pre-read: Presentation on health systems readiness (pdf).

GMP presented the results from the first paper developed in-house and presented at the February meeting. The initial approach proposed a conceptual framework to quantify health systems’ capacities for malaria elimination, building on existing systems analysis frameworks based on transmission levels and gross domestic product (GDP) levels and modifying them to suit the potential needs of a malaria eradication programme. At this initial stage, it was not ideal to do a time series analysis of indicators versus incidence using 2016 data. The SAGme emphasized the need to consider approaches to surveillance and planning based on the concept of ‘minimum essential data.’ The SAGme noted that, while other eradication programmes have focused on ways to improve health systems, it is also important to understand how to determine health systems’ capacity to implement malaria elimination or eradication campaigns.

Although previous and ongoing disease eradication programmes (DEPs) have relied on health systems to support key components of intervention delivery and surveillance, there has been limited formal analysis of the interaction between DEPs and health systems or of
the level of performance considered adequate to trigger or sustain a DEP. Previous research has focused mainly on the negative and positive effects of DEPs on health systems and outlined approaches to ensure that eradication activities confer maximum benefits on health systems, while maintaining overall programmatic goals.

It was initially proposed to look at 25 indicators from the Primary Health Care Performance Initiative (PHCPI) for countries that were malaria-endemic in 2000. However, availability of annual data on key indicators was lacking and it was not possible to conduct a useful time series analysis of health system determinants of the change in malaria since 2000.

It was therefore proposed to rethink the objectives of the analysis – from a health systems readiness analysis to a health systems effectiveness analysis. This approach will use changing access to malaria interventions and impact on disease in an effectiveness decay analysis to investigate the health system factors most important to each component of the effectiveness process.

The SAGme considered that the work package was on the right track in including the effectiveness decay. However, a few participants raised concerns over the ability to arrive at the specifics described, for example, being able to isolate specific features associated with more rapid progress.

One point of discussion revolved around the prompt diagnosis and treatment delivered through public health systems. There is a need to clearly separate those other mechanisms/indicators that are not built on the system and go beyond routine systems, e.g., MDA, IRS, distribution and use of ITNs. Such mechanisms/indicators should be factored into any analysis.

With regard to the private sector, it was discussed that there is a huge bias among development agencies and academics to focus only on the public sector. For instance, most of the available data in Nigeria and most of Asia are based only on the public sector, despite the fact that most health care is handled by the private sector and a large proportion of patients attend private facilities.

4. Potential risks that could threaten or delay eradication

Chair: Dr Alex Coutinho; Presenter: Ms Charlotte Rasmussen; Discussant: Dr Bruno Moonen, on behalf of Dr Chris Elias

Supporting documents:

- Case study series on malaria conflicts and emergencies – Gretchen Newby and Ingrid Chen, UCSF

During the last meeting of the SAGme, a working group identified a long list of risks that could potentially threaten or delay eradication. These potential risks included zoonotic malaria, environmental changes, natural disasters, and conflicts.

A short paper was commissioned and presented on currently known parasites in non-human primates that could infect humans, including *P. knowlesi*. The report presented to the SAGme showed that simian malaria is a potential threat to the eradication of malaria generally in the human population. Recently, there have been cases of simian malaria in
South America (*P. simium* and *P. brasilium* from new world monkeys) and in Asia (*P. knowlesi* and *P. cynomolgi* from old world monkeys). There have been reports of travellers returning from sub-Saharan Africa infected with ape *P. vivax*.

The SAGme group felt that zoonotic malaria needs to be acknowledged as a risk, and we need to be more proactive regarding the potential threat posed by zoonotic malaria. Systematic, longitudinal monitoring of populations at risk of simian malaria is required, and surveillance should be conducted in areas identified as at high risk for zoonotic malaria. The group acknowledged that there is a lack of information and tools to easily facilitate this type of monitoring, and further investment in research and development is needed. Most of the information on non-human primate malaria that is currently available is from Malaysia and neighbouring countries, where the majority of malaria in humans is *P. knowlesi*. A WHO/WPRO Evidence Review Group meeting on *P. knowlesi* took place in Malaysia in March 2017, and the paper presented drew on the conclusions from this meeting. However, there were questions regarding the prevalence of *P. knowlesi* in macaques in India. A short discussion was also held on the 12 cases in Hainan Island identified as *P. malariae* by PCR. The patients infected had not left the province and some could potentially have been infected while staying overnight in the mountains. One possibility put forward was that monkeys had served as a reservoir, but no current evidence supports this hypothesis. On drug resistance, the general agreement in the group was to consider it a risk; there was further discussion and agreement on the following day for the outcome of the breakout session.

In addition, as part of the work package, the UCSF Global Health Group’s Malaria Elimination Initiative (MEI) was commissioned to conduct a series of short case studies. These case studies investigate malaria control and elimination efforts in the context of violent conflicts, natural disasters and other health emergencies, drawing out challenges, successes and lessons learned. The goal is to identify best practices that can be incorporated into future eradication strategies as malaria programmes and stakeholders set out to mitigate potential risks and drive progress towards national, regional and global elimination goals. Preliminary findings from cases studies looking at Afghanistan and Sri Lanka were presented.

The group proposed considering other potential case studies that look at government health system breakdowns, complex emergencies and natural disasters. Cross-border analysis has not been covered by current case studies and could also be considered.

### 5.1 Framework for evaluating the economics of malaria eradication

**Chair:** Dr Xiao-Nong Zhou; **Presenter:** Dr Scott Barrett

**Supporting documents:**

- A framework for evaluating the economics of malaria eradication – Scott Barrett, ULenfest-Earth Institute Professor of Natural Resource Economics, School of International and Public Affairs & Earth Institute, Columbia University

The economics of malaria eradication might seem to be of secondary importance compared to the strategic and operational aspects of an eradication campaign, but the economics of eradication are actually central to the entire enterprise for three reasons: First, the justification for pursuing eradication should rest on whether its achievement would make the world better off, and this is precisely the question that the economics of eradication should answer by comparing eradication to its alternative, optimal control. Second, the
The economics of malaria eradication depend on how eradication is to be achieved, the feasibility of it being achieved, and the risks involved, including the risks that the effort will fail and that malaria might re-emerge after eradication has been achieved. This means that the operational, technical, biological, ecological and social aspects of eradication must all be reflected in the economic analysis. Finally, the economics of eradication should expose the incentives for all the “players” to contribute to the effort, including the incentives for individuals to adopt the measures needed to stamp out transmission, even when their risk of being infected is very low; the incentives for countries to pursue elimination within their jurisdiction; the incentives for public–private partnerships to develop new tools; and the incentives for all countries to finance the effort and see it through to completion.

A discussion point that several participants came back to was whether optimal control of malaria, as the counter-scenario to eradication, should be applied at the national, regional or global level. At the country or regional level, optimal control could be elimination, but optimal control at the global level may have to account for some countries that have not eliminated malaria. Participants generally felt that it was important to define the counterfactual to eradication, but that the term ‘optimal control’ may be misleading. A world with endemic malaria in Africa and in areas of the Americas and Asia would create a chronic instability that would constantly generate biological resistance. Since this scenario may ultimately be costly and unsustainable, it would therefore not be optimal. However, it was also pointed out that the pursuit of eradication may accelerate the evolution of resistance and, therefore, one also needs to consider the probability of eradication efforts succeeding or failing when determining the optimal goal. The presenter, Dr Barrett stated that optimal control refers to what is stable, achievable, desirable and sustainable indefinitely. An advantage of eradication is that programmes to eliminate malaria or prevent reintroduction could be wound down; the costs of malaria programmes would be reduced, while the benefits would last in perpetuity. Hence, if eradication is feasible, the economics of eradication generally look good. Elimination and eradication were considered to also have an equity component, because as countries approach elimination, it is the most vulnerable populations who continue to be affected by malaria. Moreover, if the global optimum is one wherein malaria is allowed to continue, how should the choice be made as to which populations remain with malaria?

5.2. Economics of malaria eradication

Chair: Dr Xiao-Nong Zhou; Presenter: Dr Richard Cibulskis; Discussant: Dr Richard Feachem

Supporting documents:

1. Malaria and economic growth: revisiting the evidence – Jean-Louis Arcand, Nayantara Sarma
2. Projected impact of malaria control and elimination on economic output – Seoni Han, Jeremy Lauer, Edith Patouillard, Richard Cibulskis

GMP held a meeting of economists and epidemiologists in June 2017 to further refine the questions that should be addressed in the economics work stream. Initial results in four areas were presented: i) empirical analysis of the link between malaria and a country’s GDP, as undertaken by the Graduate Institute, Geneva. Results showed that the impact was less than that estimated by Gallup and Sachs (2001), but malaria-free status was associated with 5% higher GDP per capita and a 1% increase in the annual GDP growth per capita, controlling for a range of factors. The benefits of malaria eradication would be seen
primarily in poorer countries; ii) modelling of malaria’s impact on labour force, human
capital and physical capital using the Economic Projections of Illness and Cost (EPIC) tool, as
undertaken by the Graduate Institute and WHO, Geneva. Results for Ghana and Senegal
indicated positive effects of malaria control on modelled GDP of the same order of
magnitude as found in the empirical analysis; iii) analysis of the relationship between the
costs and benefits of malaria control (Imperial College, London). The results indicated that
the economic benefits of malaria control exceeded the costs over most of the programme
coverage range (up to 75% coverage), suggesting that malaria control is a good investment;
iv) analysis of financing of malaria programmes (undertaken by WHO and IHME). Results
illustrated the benefits of malaria control to a country’s budget and considered the
potential for domestic malaria funding to expand.
Some participants noted that economic benefits were not generally an argument in the call
for the eradication of other diseases; such arguments were made retrospectively.
Nonetheless, retrospective analysis has promoted donor engagement in other programmes
and economic analyses have had an impact in elevating issues for investment. The SAGme
agreed that the economics component is important for framing the financial support for
global programmes, particularly at the country level. Moreover, if a goal of eradication
were put to the WHA, a primary question would be: What is the cost, and who is going to
pay for it?
Work on the relationship between malaria and economic growth was considered valuable,
and there are many benefits in taking this work forward: It will be of value in demonstrating
to donors the wider impact of malaria investments and in making the case for malaria
exceptionalism in going for eradication. The work may need to consider how resources
would be allocated differently by agencies such as the Global Fund with a goal of eradication versus a goal of optimal control, e.g., if investments should be sequenced
differently, front-loaded etc. It would be helpful to ensure that similar scenarios are
compared in the empirical analyses and in the modelling. The work should also consider the
positive effects of eradication on tourism and business development, not just on workforce
productivity.
Further analyses of GDP per capita growth projections and the proportion of health sector
funds devoted to malaria will help to build a plausible case for financing malaria and
establish what individual countries and donors should contribute. The work on comparing
the costs and benefits of malaria control is potentially important to countries in making a
business case for domestic investment. It will also be important to demonstrate that the
benefits of malaria control and elimination generally accrue to the most marginal and
vulnerable populations in a country.

6. Factors associated with an accelerated decline in malaria parasite prevalence in
areas of high transmission

Chair: Dr Marcel Tanner; Presenter: Dr Kim Lindblade; Discussant: Dr Larry Slutsker on
behalf of Dr Kevin Marsh

Supporting documents:

- Progress presentation and key outcomes

Data were extracted from Demographic and Health Surveys (DHS) and Malaria Indicator
Surveys (MIS) to identify subnational regions with a high prevalence of malaria (i.e., >35%)
by microscopy and with at least two surveys conducted between 2000 and 2015.
Multivariable models were used to identify factors associated with higher rates of decline of malaria transmission between surveys. The average decrease was 3.7 percentage points per year between 2006 and 2015. Areas with a higher baseline malaria prevalence experienced higher rates of decline in parasite prevalence over time. The areas with higher rates of decline also experienced lower child, infant and neonatal mortality rates. Indicators related to socioeconomic status were generally more favourable in areas with higher rates of decline. In multivariable models, only the baseline parasite prevalence and the socioeconomic index were associated with faster declines in parasite prevalence. However, some limitations of the analyses were noted, such as the exclusion of surveys in which malaria prevalence was measured using rapid diagnostic tests. It was recommended that additional variables be extracted from the DHS/MIS, while variables from other datasets, including rainfall anomaly, historical transmission intensity, elevation, population density and mobility, should be explored.

The SAGme considered the original intent of this work package and discussed a slight course correction. The SAGme recommended exploring the quality and coverage of interventions in high-burden areas in order to determine the potential impact on malaria transmission of scaling up these interventions to full, quality implementation. Remaining malaria transmission would be considered residual transmission, and a modelling exercise should be undertaken to determine the potential additional impact of new, near-term interventions, such as vector control tools addressing outdoor transmission. This analysis should be combined with analysis of future trends in order to identify those areas that are likely to be the last areas to eliminate before eradication is achieved.

7. Megatrends and populations at risk of malaria

Chair: Dr Marcel Tanner; Presenter: Dr David Schellenberg; Discussant: Dr Mirta Roses

Supporting documents:

1. Megatrends and populations at risk of malaria – David Schellenberg
2. Researching linkages between deforestation and P. knowlesi in Sabah, Malaysia: case study – Chris Drakeley and Kimberly Fornace, London School of Hygiene and Tropical Medicine
3. Factoring climate change into malaria eradication strategy – Hannah Nissan, Israel Ukawuba, Madeleine Thomson, International Research Institute for Climate and Society, WHO Collaborating Centre on Early Warning Systems for Malaria and other Climate Sensitive Diseases

Megatrends of potential relevance include population growth, urbanization, climate change, land use change, migration and development. Review of the literature did not identify robust estimates of the effects of any of these individual factors on malaria risk. It is not, therefore, possible to generate precise quantitative forecasts of specific changes and consequences, or even to determine with confidence which populations may become newly exposed to malaria or, conversely, which populations’ current malaria risk can be expected to decline. GMP presented an overview of broad trends and provided some insight into the complexities of the interactions among them.

The SAGme acknowledged the difficulty of predicting the future and appreciated the importance of prioritizing consideration of the megatrends that impact malaria in order to better define interventions and evaluate risks. The SAGme recommended developing matrices with which to evaluate the effect of each megatrend on malaria overall, as well as
on parasites, vectors and people. Furthermore, it will be important to consider these matrices for each region, as the relationships may vary by place. The aim should be to consider the key components and to define whether the world currently has the right interventions or whether novel approaches need to be developed in the future.

The SAGme recognized that, while some risks could be mitigated, the malaria community has little influence and control over others. GMP responded that the adverse effects of climate change on malaria, for example, are likely to be largely manageable, as other influences (e.g., economic development) may have more powerful effects on malaria risk than progressive climate change. In addition, climate-related data-based predictions are increasingly used to target resources and responses to enhance malaria control. There is a continuing need to identify how climate and malaria surveillance and forecasting systems can interact to enhance malaria control. On the issue of mobility, it will be necessary to develop regional strategies to manage risk of importation and to better understand parasite population movement – another risk turned into opportunity. Looking forward, the key question is how to bring all of these trends together. A few ideas emerged, such as categorizing the megatrends as “working in our favour, against our favour or unknown,” and harnessing multisectoral mechanisms established for other purposes, e.g., solid waste management in urban environments.

A point of discussion revolved around high-burden countries, mainly on the African continent, which will probably face the most difficult challenges and where donors are currently focused more on controlling morbidity and mortality. There was general consensus on the need to focus on the “heartland” first in order to maximize the short-, medium- and long-term returns on investments. Failure to make progress in malaria control in the most heavily burdened parts of the world now will delay the prospect of eradication in the future. Lastly, in terms of governance, there needs to be a push to insist that governments prioritize these issues that strongly affect their populations and seek a better recipe for addressing the transitional period.

**Final conclusions and next steps**

At the final session, the SAGme suggested that the following be considered:

1. To agree to set the timeline for the work in order to adopt the plans presented;
2. To provide progress reports on SAGme work packages and recommendations to the WHA70 and/or WHA72;
3. To map out the pathways for a potential call for a global malaria eradication campaign, to include regional committees and other political mapping. GMP will map timings in conjunction with the Regional Offices;
4. To organize a task force meeting with work package leaders to be held in June 2018 to present and discuss close-to-final products; to aim for a final SAGme meeting by Q1 2019 for which final products and recommendations would be adopted for presentation to the DG;
5. To consider participating actively at the Commonwealth Heads of Government Meeting (CHOGM) or at the 7th MIM Pan African Malaria Conference, both to take place in April 2018.

The GMP Director concluded the meeting by recognizing the turning point the SAGme had taken and highlighting that the two days had crystallized a lot of the work developed over
the previous few months. The Director also explained how the new WHO administration is going through a transitional period, with elections coming up for WPRO, EMRO and AFRO. In this context, GMP has an important role to play as technical advisors to the Regional Directors.

References

