MEETING REPORT

Thirty-third Hybrid Meeting of the RBM Partnership to End Malaria
Surveillance, Monitoring, and Evaluation Reference Group (SMERG)
17–20 May 2022

Venue
Kigali Marriot Hotel, Kigali Rwanda

Photo: SMERG Secretariat

Main Theme

Streamlining SME to sustain gain and fully respond to emerging priorities in malaria control and
elimination. What do we need to continue doing? What do we need to do differently?

Acronyms

ACT	artemisinin-based combination therapy
APE	Agente Polivalente Elementary
CHC	Community Health Committee
CHW	community health worker
CIMS	Campaign Information Management System
COVID-19	Coronavirus Disease 2019
CRSPC	Country/Regional Support Partner Committee
DHIS2	District Health Information Software, version 2
DRC	Democratic Republic of the Congo
GMP	Global Malaria Programme
HMIS	health management information system
IRS	indoor residual spraying
MiP	malaria in pregnancy
NMCP	National Malaria Control Program
NMP	National Malaria Program
PMI	President's Malaria Initiative
RDT	rapid diagnostic test
RHAP	Rwanda Health Analytics Platform
SMC	Seasonal Malaria Chemoprevention
SISCOM	community health information system
SME	Surveillance, Monitoring, and Evaluation
SMERG	Surveillance, Monitoring, and Evaluation Reference Group
SP&DQ	Surveillance Practice and Data Quality
WHO	World Health Organization

Subtheme 1: All-inclusive malaria SME approach

Subtheme 2: Malaria SME in the context of specific intervention—protocol, tools, process, and indicators

Subtheme 3: Accurately measuring malaria service/intervention coverage and impact

Subtheme 4: Setting up a resilient SME system for all transmission settings

Subtheme 5: Updates on RBM and SMERG business

Meeting Notes
Overview
It was with excitement that after a series of virtual meetings over the past three years, the RBM Partnership to End Malaria Surveillance, Monitoring, and Evaluation Reference Group (SMERG) organized a very successful hybrid meeting from 17 to 20 May 2022, in Kigali, Rwanda. This 33rd SMERG Annual Meeting brought together 59 in-person SMERG participants from 20 countries. Online participants and speakers had the opportunity to connect and participate during the meetings through Zoom and live streaming links. The four-day meeting, which started with a study tour on the first day, had an overarching benefit of enlightening participants of how malaria control efforts are being coordinated in Kigali, Rwanda.

Study Tour
Dr. Emmanuel and Dr. Jean Damascene, Rwanda National Malaria Control Program (NMCP)

The study tour was coordinated by Dr. Emmanuel and Dr. Jean Damascene of the Rwanda NMCP. The visit to the Bugesera District showed participants how the district is operationalizing malaria surveillance through data collection and reporting, data quality assurance processes, data analysis and use, linkages among data (case data, entomological data, therapeutic efficacy data), and innovations and challenges encountered in the process. At the health center level, the team visited the Nyamata Health Center and learned how malaria data are being collected, reported, and used, as well as how community health workers' (CHW) data fit into the health facility reporting. Participates were so thrilled with the visits at the community level, which were well organized and effective. Community volunteers were well engaged and conducted their tasks with passion. They recounted that their passion for the job was motivated primarily by the respect demonstrated to them by the community.

Discussion: Question and Answer Session

Question: Are the 12 entomological selected sites sufficient?
Answer: Yes, it is a representation from all the strata, and they believe the 12 sites are enough

Question: How do you handle human behavior regarding the control or elimination of malaria?
Answer: So far, efforts are geared toward control of malaria by using mosquito nets and spraying indoors. However, mosquitoes do bite outdoors. As the intervention enters the second phase, which is the elimination phase, efforts would be geared toward human behavior that may impact mosquito elimination.

Chair of the session: Médoune Ndiop, NMCP Senegal, SMERG Co-Chair

Overview of the Rwanda malaria surveillance system—including the community component
Dr. Aimable Mbituyumuremy, Rwanda NMCP (in person)

Dr. Mbituyumuremy (Rwanda NMCP) presented an overview of the Rwanda malaria surveillance system, citing key reporting systems and platforms for malaria-related data, which encompasses the health management information system (HMIS), community health information system (SISCOM), RapidSMS, electronic Logistic Management Information System, and Rwanda Health Analytics Platform (RHAP). The dynamic malaria program surveillance teams from the 12 entomological monitoring sites routinely collect and report data into the HMIS, SISCOM, and RHAP systems; report real-time notifications through RapidSMS; and conduct the therapeutic efficacy study and health facility surveys as well as entomological surveillance. Quality control and entomo monitoring of sentinel sites include long-lasting insecticide-treated net monitoring, insecticide resistance management, insecticide rotation, and bioassay. In addition, he provided another presentation on *Data for informing programmatic decision-making Experience from Rwanda.* For more details on these presentations, click here.

World Health Organization (WHO) surveillance manual: Updates on the revision process
Molly Robertson, Global Fund Co-Chair SMERG (in person)

Noor of WHO was not able to join the meeting, so Molly Robertson provided a brief update on the WHO surveillance manual revision process. She confirmed that the WHO surveillance manual is in process and will include more information on stratification. The development of the subnational and urban malaria manuals is also in process, and all will come out soon. Participants wondered why WHO was absent in such a meeting and requested that SMERG should do all to bring all partners together during such encounters.

Role of CHWs in malaria surveillance: Practical example of Cameroon
Dr. Ekoyol Germaine, Cameroon NMCP (in person)

Expounding on this topic, Germaine presented an exposé of malaria being the main cause of morbidity and mortality in Cameroon using the epidemiological situation. She underscored the fact that the prevalence rate as reported in the 2011 Demographic and Health Survey decreased, from 30 percent to 24 percent in 2018. She stated that, according to WHO statistics, Cameroon is among the 11 countries with the highest malaria burden in the world due to insufficient human, financial, and material resources; low involvement of beneficiaries in the management of health problems in the community; insufficient use of health services; and poor access to health care by community members, worsened by insecurity in certain regions, and Coronavirus Disease 2019 (COVID-19). Faced with these challenges, there was a need to involve the community for better results. The implementation of community-based surveillance tagged in the National Strategic Plan for Community Health 2021-2025 was initiated and supported by several development partners, as well as a "case investment case." The details of the objectives of the National Strategic Plan for Community Health, the eligibility of CHWs, how CHWs are integrated through training by the Ministry of Health and partners, activities, and administrative and technical supervisions, and the reporting process could be accessed through this link.

Private sector as an integral part of the solution for malaria surveillance—Nigeria Integration efforts
Dr. Perpetua Uhomoibhi, Nigeria National Malaria Elimination Program (in person)

As cited by Perpetua, the National Malaria Strategic Program 2021-2025 has five objectives, and the private sector as an integral part of the solution for malaria surveillance resonates fully with objective 3, which aims to "*Improve generation of evidence for decision making and impact through reporting of quality malaria data and information from at least 80% of health facilities (public and private) and other data sources including surveillance, surveys, and operations research by 2025.*" Elaborating on this, Perpetua pinpointed the strategies that are being implemented to incorporate the private sector as an integral part of the solution for malaria surveillance. These strategies include the following:

- Strengthen the generation and reporting of quality malaria data through routine and non-routine sources.
- Improve the generation of evidence from evaluations, therapeutic efficacy studies, and entomological surveillance studies for strategic deployment of interventions.
- Strengthen human resource for surveillance, monitoring, and evaluation (SME) operational research.
- Harness innovation in technology and expand research for malaria programs.
- Integrate and coordinate SME operational research interventions.
- Develop a functional Pharmaceutical Management Information System to strengthen evidence-based decision making for malaria programming.
- Collaborate with the National Agency for Food and Drug Administration and Control and the National Product Supply Chain Management Program for integrated supportive supervision activities and promote quality assurance for malaria medicines and commodities across all facilities (public and private).
- Reinforce and enhance advocacy approaches targeting private sector stakeholders to improve timely, appropriate, and reliable malaria data reporting.

Perpetua provided an overview and the challenges of malaria surveillance in Nigeria in general and those specific to the private sector, which include but are not limited to the following: minimal regulation, low private sector contribution to the HMIS, minimal oversight mechanism for the private sector, limited understanding of the national quality standards and compliance of products, poor visibility on the provision of diagnostic services, poor penetration in the rapid diagnostic test (RDT) market and limited demand, and limited coverage of the National Health Insurance Scheme in the private sector. She concluded this presentation on a high note by enumerating some efforts of the National Malaria Elimination Program and partners in the private sector and the strategies for engaging the private sector on surveillance. For more details, click here.

Role of digital technology in streamlining, collection, reporting and use of malaria surveillance data
Poppy Farrow, Malaria Consortium (in person)

Poppy provided a presentation on a Ministry of Health-led digital health system called upSCALE that is used for strengthening platform for CHWs in Mozambique. This digital health system has been implemented with the support of Malaria Consortium and UNICEF since 2016, with financial support from DFID/UK Aid, in seven provinces in Mozambique. Poppy underscored the fact that the Mozambique Ministry of Health has incorporated upSCALE into its new national strategy for CHWs and aims to expand to the entire country by 2024. Poppy highlighted three main objectives of upscale: improving the quality of the Agente Polivalente Elementary (APE) case management, health

education, and patient follow-up; supervising monitoring of APE performance and stock management; and improving quality and usage by providing near real-time patient data from the upSCALE app that are sent to the national health system through the District Health Information Software, version 2 (DHIS2) for monitoring and decision making at multiple levels. She also enumerated the following benefits of using upSCALE: bringing health services closer to the patient; reducing clusters of patients in health facilities; serving as an orientation guide for the APEs; supporting the APE in the registration of households; supporting health promotion, diagnosis, and treatment of patients in the community; reducing errors in diagnosis and treatment (dosing and medication management); digitization of health services at the community level; ensuring the flow of information (data/forms, weekly and monthly reports); ensuring monitoring through calls and messages in the closed user group (APEs, supervisors and coordinators); and enabling real-time data availability for decision making.

Although upSCALE has the capacity to be one of the most detailed surveillance tools in community case management globally in capturing geo/temporal data at the individual level, it is not without challenges, Poppy cautioned. Some of the challenges include funding gaps and delays, lack of sustained donor funding, obsolete mobile devices and damaged solar, lack of grassroots mobile device repair and replacement investment, and challenges related to partner coordination efforts. The presentation can be accessed through this link.

Surveillance for elimination: Case-based reporting and data quality assurance
Dr. Moustapha Cissé, MACEPA/PATH (in person)

Dr. Cissé enumerated some of the investigation strategies that have been implemented since 2011 to accelerate malaria elimination, which encompass a strategy selection that was based on evidence from pilot implementation and research. It was essential to have a good data management and analysis system, quality data, strengthened data quality assurance, and a good data tracking and visualization system. Using the work in Senegal as an example, Dr. Cissé elaborated on the case investigation approaches used in Senegal, which included FTAT/FSTAT, FTAT, FDA, and MFDA.

Case management was conducted by weekly case investigation through data transmission by DHIS2 web or mobile or by phone, and the feedback was transmitted weekly by the MACEPA team to the district to ensure data completeness. The scale-up of case notification to the national level has been implemented since 2018. Case investigation strategies included passive malaria case detection through registers, and case documentation through the DHIS2 Tracker took place on the first day, and investigation through the DHIS2 Tracker was conducted by Day 3. The data quality audit included a peer data quality assurance workshop process and onsite data quality assurance process. Some of the challenges encountered were management of data flows, integration of data, automation of the data integration process, development of a fact sheet for the presentation of annual performance, funding, and integration of the private sector, among others. For more details, click here.

Discussion: Questions and Answer Session
Arantxa Roca-Feltrer, Malaria Consortium (in person)

This discussion session was moderated by Arantxa, and it was a Q&A format. Online participants could post their questions on the chat box.

Question: How do you interlink epidemiological, entomological, therapeutic efficacy study, and meteo data to plan and implement response activities in the community?
Answer: This depends on the level of infection and the type of zone of transmission (high or low). When less than five cases, it is classified as epidermic, and when more than five, it is considered inflammation epidermic, and the necessary interventions would be applied accordingly.

Question: When evaluated in SE Asia, the 'ultra-sensitive' PfHRP2-based RDTs performed below expectations (less sensitive than expected). What is the experience in Senegal/other countries?
Answer: Dr. Cissé responded that there is no significant difference with the standard RDT.

Question: What is the method for detecting malaria epidemics used by Senegal?
Answer: Senegal uses clinical surveillance (of cases), entomological surveillance, and genomic surveillance. Also, there are 24 sentinel malaria surveillance sites in all parts of the country with epidemic alert thresholds defined and monitored on a weekly basis at each site. In the pre-elimination districts, surveillance and notification are in real time.

Question: What are the criteria used in Cameroon to select community workers? Since it was mentioned in the presentation that "to know how to read and write" was a prerequisite for selection, what happens if this criterion is not met but other criteria are satisfied?
Answer: This criterion has been redressed in Cameroon because in some communities, particularly in the northern region, it is difficult to find community workers who can read or write English or French. In such cases, a transcriber will always accompany them in the field.

Question: The need for integration, that is, most community health facilities are concerned with care and treatment of malaria, but there are cases where the illness may be caused by other diseases; how do you handle that?
Answer: Previously, care and treatment for each disease type was offered by a designated CHW for that disease, but the new government regulation states that the CHW must be polyvalent (multipurpose), so the CHWs are trained to handle all the different types of diseases catered for in that health facility.

Question: It was said that the private sector in Nigeria represents 50 percent of the health facilities. It is a known fact that free care is seldom available in the private health facilities; how does the government ensure that the population gets the care needed in the private sector?
Answer: The government has set aside some funding through what is known as a basic health care provision fund that is a support scheme to assist both government and private health sectors to provide basic health services to the community. This is performance based, and many states have satisfied the required conditions, and each state has to request the funding.

Question: What are they steps that are being taken to sustain or own the systems that have been put in place for monitoring at the NMCP level in Mozambique and MACEPA?
Answer: The Ministry of Health is included right at the beginning so it can continue the sustainability of the intervention.

Question: The efforts for monitoring the entomological efforts Rwanda and Cameroon
Answer: In Rwanda, a protocol is developed before the distribution of bed nets. Then the baseline is first conducted, followed by monthly entomology monitoring done by selecting three villages per site and by using the two methods—human landing catching and Centers for Disease Control and Prevention light traps. Insecticide resistance is also conducted on annual basis. Key factors are also monitored and collected (e.g., attrition).

Question: What are the experiences of community workers in Cameroon, Senegal, Rwanda, etc.?
Answer: In Senegal and Cameroon, CHWs are not only engaging in malaria cases, but also other diseases such as respiratory diseases and diarrhea in children, follow-up for children for vaccination, and follow-up of pregnant women to remind of their appointments. A participant suggested that CHWs should be motivated or allowed to carry out other activities to sustain themselves.

Monitoring and evaluating effective implementation of Seasonal Malaria Chemoprevention (SMC); implications for coverage and impact
Monica Anna de Cola, Malaria Consortium (in person)

Monica provided a brief background on SMC, implications for impact coverage and effective program delivery, linking of inputs to impact, an overview of the SMC monitoring and evaluation framework, preliminary results, and next steps. In discussing the impact of SMC, she stated that clinical trials indicate that SMC prevents up to 75 percent of uncomplicated and severe cases if implemented to quality standards with acceptable levels of resistance. The SMC monitoring and evaluation framework used to assess implementation is aimed at safely preventing malaria cases in eligible children living in areas targeted by the SMC program supported by Malaria Consortium within the intended period of protection. Challenges in operationalizing the framework include obtaining the data in a timely manner; cleaning, manipulating, and uploading the data; and the extensive number of indicators. Monica cited the next steps in monitoring and evaluating the effective implementation of SMC, with emphasis on implications for coverage and impact as distilling the framework into priority indicators, redefining linkages across inputs to impact, finalizing the dashboard set up, comparing impact across years, and linking to impact analyses. For more details, click here.

Triple artemisinin-based combination therapy (ACT)
Arjen Dondorp, MORU (remote)

This presentation was provided remotely by Arjen Dondorp from MORU. He elaborated on the triple ACTs that are aimed at treating and preventing multidrug-resistant falciparum malaria. The ACTs are as follows: artemether-lumefantrine, artesunate-mefloquine, dihydroartemisinin-piperaquine, artesunate-amodiaquine, artesunate-sulphadoxine-pyrimethamine, and artesunate-pyronaridine. Two new antimalarial drugs under development are spiroindolones and imidazolopiperazine, and artefenomel has been pulled from the market. Arjen explained that there are indications of potential impact of artemisinin resistance in the African context that necessitated pharmacological interventions, including triple therapies: AS/DHA-PPQ-MQ, AM-LUM-AQ, Arterolane-PPQ-MQ, AS-Pyr-Atovaquone-Proguanil. The main challenge of triple artemisinin-based therapy is "why deploy a triple ACT when conventional ACTs are still efficacious?" For more details, click here.

Geospatial modeling of health care access to improve interpretation of routine surveillance data
Alyssa Young, Tulane School of Public Health, and Tropical Medicine (remote)

Using the Democratic Republic of the Congo (DRC) as prototype, Alyssa provided a presentation on quantifying access to health care to improve interpretation of routine surveillance data. DRC has the second-highest number of malaria cases and deaths globally (WHO, 2019). Due to the numerous challenges encountered in accessing health care services for malaria in the DRC that negate the use of routine surveillance data in quantifying malaria burden and the fact that true malaria burden could not be accurately represented in areas with underserved populations, there was a need to develop a mechanism for quantifying and understanding access to health care to improve interpretation of surveillance data in DRC. This is a three-step approach mechanism through the creation of a modeled spatial layer that helps us understand health care accessibility by fitting catchment models to service populations, applying a statistical model to identify latent processes behind health care seeking behavior and malaria risk, and translating these outputs into indicators that can be integrated into DHIS2 dashboards. For more details, click here.

Vector control indicators guide—Lessons learned from use of current indicators in the context of overall malaria surveillance
Sarah Burnett, PATH (in person)

Sarah from PATH provided a succinct presentation on the vector control indicators guide. In her presentation, she highlighted on the purpose of the guide, the overview, and who should use this guide and why. Discussion centered on the best practices of the guide under four major headings: use cases, quick visualizations, key indicators, and tips and resources. To access the presentation, click here.

Discussion: Question and Answer Session

Question: Did the resistant pattern experienced in certain sites affect the choice of the triple ACT that was tested?
Answer: Currently, it was compared to the ACT that was used in that country rather than on the resistance to the pattern drug.

Question: Talking about the list of health facilities...where did you get the list and what types of facilities are included (public/private/confessional)?
Answer: The facility list is both public and private facilities. These are currently included in the DHIS2.

Question: I found it fascinating and glad to see the level of triangulation across multiple sources. Given that the Demographic and Health Survey 2013 is now dated, would you consider exploring the Multiple Indicator Cluster Survey 2017, which does not have as many indicators but would better correlate with the Service Provision Assessment 2017-18 data?
Answer: That is a limitation of the model that was used. It was difficult to get Global Positioning System data because the Multiple Indicator Cluster Survey maps would only be at the regional level. It will be great to use data from alternative sources to confirm the result.

Subtheme 3: Accurately measuring malaria service/intervention coverage and impact

Chair of the session: Eric Eckert, RTI

Defining country-driven research priorities for malaria control and elimination
Samantha Herrera, PA (remote)
Prof. Roger Tine, UCAD (remote)

Samantha provided a presentation focusing on the overview of the President's Malaria Initiative (PMI) Insights project. This is a five-year cooperative agreement (October 2020–September 2025) that is a centrally funded mechanism with three key objectives: supporting country-driven research prioritization; designing and implementing modeling, operations research, and performance evaluation studies; and facilitating the utilization of study findings to inform program guidelines, strategies, and policies. The research prioritization scope consists of operational research and program evaluation questions for malaria control and elimination interventions that have promising evidence demonstrating their safety and efficacy and for approaches and tools designed to improve the delivery and effectiveness of proven malaria control and elimination interventions. This activity aims to identify common research questions that may provide learning to inform multiple National Malaria Program's (NMP) strategies, policies, or implementation, or the global malaria community more broadly. The stakeholders are made up of NMP representatives; research institutions from malaria-endemic countries; donor agency staff from PMI, Gates, and the Global Fund, and WHO Global Malaria Program staff at country and regional levels; and global technical partners who

support research and implementation in malaria-endemic countries. They are engaged in a five-phase prioritization process. Key challenges, bottlenecks, and evidence gaps have been identified, and SME priorities are research priorities. The three key takeaways from prioritization are as follows:

- Research priorities reflect persistent challenges faced by NMPs in the implementation of core interventions; addressing the priorities can help support NMPs to reach high coverage and improve overall intervention effectiveness.
- NMPs have insufficient evidence on effectiveness and cost-effectiveness of specific interventions and intervention packages, and how to tailor packages for maximum impact and resources efficiency.
- Many of the research priorities speak to broader health systems issues that are contributing to gaps in malaria intervention coverage; these issues need to be addressed to improve effective coverage.

The next steps in the prioritization process include developing a mechanism to track progress against the research priorities, using the list to inform investments, defining a process to regularly review priorities, and updating the list to reflect progress and new emerging priorities. For more details, click here.

Discussion: Question and Answer Session

Questions to Samantha and Prof. Roger Tine:

Due to the differences in time zone, this was prerecorded so Samantha was not readily available to answer questions. The following questions were asked, although they had no response.

Questions: Great presentation from Samantha. The question now is, how do we harmonize all the efforts so far?
After answering the research question that will be operational research and probably evaluation, how do these result impact social change?
Some of the research questions are already being addressed. How do we ensure that existing efforts are being capitalized so that duplicating efforts can be avoided?
Who is going to lead this research that has been identified?
How do we ensure that the leadership that identifies these programs comes from the MNCP and not from a funded project so that they should be a clear buy-in for the programs? NGOs? Funders? Individuals?
What is the process put in place to translate the operational research that normally takes long into immediate research?

Questions to Caterina:

Question: Since the results indicated no significance difference, have you assessed the long-term effects of the chemoprophylaxis in the systems of the children with regards to natural immunity; knowing that, with time, the risk is reduced even without drugs?
Answer: Caterina responded affirmatively that they understand the intervention has an impact on natural immunity. What is important in this research is the clinical outcome.

Question: Most of the studies so far are observational and they do have their challenges. How do you plan to incorporate such studies?
Answer: Incorporating observational studies that have already been recommended may not be possible; however, it is possible to investigate observational studies that have not yet be recommended.

Question: Would you expect rebound effect to be different based on new interventions?
Answer: The more efficacious the intervention is, the more likely it is to have a rebound. Most of the interventions so far are "leaky" interventions, meaning that they are not perfect and so still permit a certain level of natural immunity to be built. If the efficacy of the intervention is achieved, then the less likely the development of natural immunity and the more likely the rebound.

Malaria rebound: Does it need to be considered when evaluating the impact of malaria control interventions?
Caterina Guinovart, ISGlobal/PATH (remote)

Caterina provided a presentation remotely on the WHO technical consultation on the malaria rebound phenomenon. She defined rebound used in the review as, "Period of increased malaria risk after time-limited protection from malaria (i.e., after chemoprevention, vaccination, vector control), relative to individuals of the same age from the same population who did not receive the intervention." Caterina stated that the primary objective of the review is to conduct a literature review of studies that specifically evaluated rebound or that presented data on malaria-related outcomes after the malaria interventions were discontinued. This includes malaria intervention research that took place in malaria-endemic areas, with a control arm or comparison group that did not receive the intervention, regardless of transmission intensity or population age. She also elaborated on the review question and eligibility criteria, which were that the follow-up period post-intervention was more than one month in both the intervention and the comparison arm.

Some challenges encountered include difficultly comparing across studies and drawing general conclusions, there may be rebound in some outcomes, mainly uncomplicated clinical malaria, and low power to evaluate rebound for severe malaria or mortality. Overall, rebound seems to be associated with interventions that provided more protection and for a longer period. Methodological recommendations discussed comprise of standardizing the definition of rebound, the need to assess risk for both the post-intervention period and the whole follow-up period since the beginning of the intervention, evaluating of rebound should use the same methods and outcomes used for the evaluation of the intervention efficacy, and need follow-up after more than one year of the intervention cessation. Caterina emphasized that the sample sizes needed to be able to detect a rebound should be higher during the post-intervention follow-up, because malaria risk decreases as children grow older. For more details on this presentation, click here.

Spatial decision support system for understanding service coverage and intervention planning
David Galick, MCDI Equatorial Guinea (in person)

David provided a presentation on using the Bioko Island Campaign Information Management System (CIMS) as a prototype. He provided an overview of the CIMS background, the historical evaluation of indoor residual spraying (IRS) performance, an IRS case study, and facilitation of operational research. In discussing the CIMS background, David expounded on CIMS motivation that dealt with accurate denominators and the digitization of data collection and standardizing data systems; a CIMS outline that highlighted the grid-based system and the maintenance of the household database; data collection, management, and analysis; and location hierarchies. Historical evaluation of IRS performance focused on assessing IRS operational performance over time and targeting IRS coverage based on map sectors. For discussion on the IRS case study, David elaborated on using CIMS for IRS deployment planning, IRS implementation, following IRS in real time, real-time monitoring of over-spraying and the quality of spraying, and prioritizing mop-up. Finally, he explained the operational research process that includes evaluating the accuracy of survey-based coverage estimates and implementing an operational trial of IRS coverage. For more details, click here.

Discussion: Question and Answer Session

Question: Can the platform for IRS be used for mass campaign?
Answer: The response was affirmative.

Question: You talked of over-spray when coverage goes beyond 85 percent. This means you may choose just about 85 percent coverage, which may be operational and ethically incorrect. What do you have to say about this?
Answer: Operationally and ethically, this may sound incorrect but looking at it in terms of resource allocation to the neediest population, this is both cost effective and attending to the most vulnerable population.

Question: Looking at the app that you are using, is it free?
Answer: The application has no cost, but you need to host a server to store data, which is costly, and you also need android devices to capture data

Question: Is there some sort of modeling going on in relation to incorporating it into the private sector?
Answer: The model is constantly evolving each day as we learn and understand the needs. Yes, the DHIS captures data from the private sector.

Question: Is the testing rate included in the model?
Answer: Yes, it is.

Question: In a country with differing transmission, do you still include entomological data?
Answer: Yes, that structure exists within the model itself.

Subtheme 4: Setting up a resilient SME system for all transmission settings

Chair of the session: Yazoume Ye, Measure Malaria/ICF

A new generation of risk maps: Multimeric approaches using routine data and surveys
Punam Amratia, MAP (in person)

Puman provided a brief and concise overview of a new generation of risk maps. She stated that malaria stratification involves the classification of geographical areas or localities according to the risk of malaria and has long been recognized as an essential element of efficient resource allocation and a prerequisite for the rational targeting of interventions. This entails robust and accurate maps of disease burden because disease metrics of prevalence often have contradictory patterns to incidence. She underscored the fact that understanding both metrics and their pros and cons is key for robust estimates. Punam briefed the participants on the current state of the field and discussed what estimates are important, what data are available, and what adjustments are required. After presenting a series of annual average risk maps, Punam underpinned how these risk maps can inform stratification. For more details, click here.

NMCP Operational Surveillance Tracker/Surveillance Practice and Data Quality (SP&DQ) Committee: Progress and future plans

General update/RBM dashboards
Arantxa Roca Felter, Malaria Consortium and co-chair SP&DQ Committee (in person)
Candrinho Baltazar, NMCP Mozambique and co-chair SP&DQ Committee (in person)
Selgün Kayaalpli, SP&DQ Secretariat

This was a comprehensive presentation by the co-chairs of the SP&DQ Committee. The SP&DQ Committee co-chairs provided the review of the overall objectives of SP&DQ Committee. This was followed by the presentation of the SMERG SP&DQ Committee progress that showed 100 percent achievements in the establishment phase, the publication of the RBM SMERG SP&DQ Newsletter, and the Malaria Routine Data in Action Webinar Series. The committee has also achieved 75 percent in the surveillance projects dashboard and 25 percent in the NMCP Operational Surveillance Tracker. The co-chairs presented on the NMCP Operational Surveillance Tracker, which is made up of 29 questions. Participants were updated on the feedback collected so far and on the next steps, which will focus on reviewing the checklist and indicators and ranking exercise based on NMCP feedback. The co-chairs shared the link to the NMCP Operational Surveillance Tracker feedback form: https://forms.office.com/r/5ciSqwfvDJ. The list of indicators was shared with participants to rank them in terms of priority. Selgün shared the preliminary results from the ranking. To access the presentation and Tracker, click here.

Data dictionary protocol: Inputs from SMERG members
Hellen Gatakaa, PMI Measure Malaria

Hellen provided a presentation on the Guide for Developing Data Dictionaries. Speaking on the background of this initiative, Hellen accentuated the importance of understanding of indicator calculation for appropriate analysis and interpretation of indicators, being mindful of the fact that the data dictionary is seldom accessible to all users. There is also a need to understand the historic data elements and indicators found in the routine health information system. It is critical, therefore, to set up the WHO/Global Malaria Programme (GMP) malaria module, including data mapping. Hellen highlighted the purpose of the guide, stressing that implementing the guide will enable updating of the HMIS to ensure that the "right" data are captured and comprehensively defined. The methodology used in developing the guide involves an engagement process phase and a technical process phase. She enlightened participants how to use and update the guide. Some limitations of the guide stemmed from the fact that the digital solution is subject to constraints in DHIS2, the guide may not improve immediate access to information on data structure, and the guide may not generate immediate solutions to the bottlenecks identified in data analysis and interpretation. For details on the presentation, click here.

Resilience of systems: Defining the process: Indicators and resources—Brainstorming
Michael Don Hainsworth, PATH (in person)

Michael led the brainstorming session by defining defined resilience as, "The capacity of a system to react, absorb, adapt or transform in order to maintain essential functions when faced with shocks and stresses." He further stated the characteristics of resilience and suggested health system resilience indicators. Some of the questions for brainstorming included the following:

Does it make sense to focus on developing guidance for resilient surveillance, or should we describe the characteristics of surveillance that contribute to a resilient health system? Who is responsible for ensuring resilience? What processes or conditions are required to ensure resilience? Is resilience an outcome, an ability, or both? Are indicators sufficient to measure resilience? How is resilience managed and measured? For more details on suggested health system resilience indicators, click here.

Potential threats of malaria SME System and contingency plan—Country experience (Breakout sessions)
Moderator: Molly Robertson, SMERG co-chair/Global Fund (in person)

There were two breakout rooms (English and French) that discussed high transmission (e.g., DRC), moderate transmission (e.g., Madagascar), and low transmission (Zanzibar), chaired by Prof. Eric

Mukomena Sompwe from the DRC NMCP, Dr. Davy Ratovondramamy from the Madagascar NMCP, and Al Ali Mohamed from Zanzibar. To access a comprehensive breakout report of the French session, click here.

Discussion: Question and Answer Session

Discussion on data dictionary protocol: Inputs from SMERG members

A project managed by CHAI finished last year with work on a common data dictionary. It will be good to know what has been done do efforts are not duplicated because they had planned to include it within the DHIS system. It was noted that most of the good work done in the field is not really captured in the RBM website. Participants were encouraged to log into the RBM dashboard to share information and to encourage one another.

Subtheme 5: Updates on RBM and SMERG business

Chair of the session: *Médoune Ndiop, NMCP Senegal, SMERG Co-Chair*

Introduce the Global Malaria Dashboard (RBM dashboard)
Marsha Deda, RBM (in person)

Marsha presented on the Global Malaria Dashboard that provides near real-time data for decision making, transparency, and accountability. After a brief background and guiding principles of the dashboard, Marsha updated participants on the critical actions that are needed to amend the current dashboards. He further presented a schematic diagram of the current dashboards and the upcoming dashboards. He highlighted the early successes and areas of improvement. For details of the presentation, click here. To access the RBM dashboard, click on this link: https://endmalaria.org/dashboard.

Malaria surveillance assessment toolkits: Updates and cross-country results
Deepa Pindolia, CHAI (remote)

Deepa opened her presentation by giving a background of the malaria surveillance assessment toolkits and the purpose of the update. She affirmed that the surveillance assessment aims to measure performance of malaria surveillance systems and identify the determinants of that performance, providing actionable recommendations. She reiterated that the previous malaria surveillance assessments were implemented to provide recommendations on how to strengthen surveillance systems, but such approaches and tools have not been standardized across assessments, limiting comparability over time and geographies. To address this issue, a standardized malaria surveillance assessment toolkit was developed to conduct comparable and replicable malaria surveillance assessments across multiple countries and within the same country over time. The toolkit consists of tools for each stage of assessment and can be used to assess systems capturing malaria-relevant variables with a range of approaches. Comprehensive surveillance assessments have been conducted in Burkina Faso, Ghana, DRC, Cameroon, and select states of Nigeria. Deepa provided a summary of the cross-country recommendations of the interventions in Burkina Faso, DRC, and Ghana. For details on this presentation, click here.

RBM SMERG Community Health Committee (CHC): Progress and future plans
Prof. Richard Maude, MORU APMEN (remote)

Richard provided an update on the progress and future plans of CHC. He reminded participants that CHC was a remit from the 32nd SMERG action item, "Optimizing the role of community health workers in rollout of malaria service delivery, and malaria surveillance." The co-chairs are Richard

Maude (MORU/APMEN) and Luigi Nuñez (PSI), with 19 members, and it was established in September 2021. The former co-chair was Debra Prosnitz (ICF) until March 2022. Five meetings have been held so far. Richard restated the vision, aims, and approach of CHC. CHC is currently working on two action items: identify groups working on CHWs and SME, both in the malaria space and other/integrated programming, and contribute community-level SME information to a broader audience. The future plans are to hold the next meeting in early June 2022, increase involvement from other regions, finalize and disseminate the Asia-Pacific landscaping review and survey report, broadly disseminate the CHW SME landscaping survey and produce a report for wide dissemination, generate and share research summaries, and plan next steps toward guideline development. For details of the presentation, click here.

Update on American Journal of Tropical Medicine and Hygiene Surveillance Supplement Series
Yazoume Ye, ICF/Measure Malaria (in person)

Yazoume provided the update on the American Journal of Tropical Medicine and Hygiene Surveillance Supplement Series. He reminded participants of the objective of the Journal Supplement Series, with reference to how since 2015 countries have been streamlining malaria surveillance as core intervention in line with WHO recommendations and guidelines. He noted that there are several publications related to malaria surveillance in different peer-reviewed journals—but not they are not consolidated. Yazoume underpinned the fact that the proposed journal supplements aim to provide a one-stop shop on how malaria surveillance is being implemented as a core intervention—practical cases, progress, challenges, and lessons learned. He elaborated on the scope of the Supplement Series that consist of three journal supplements (1, 2, and 3). For details of these Journal Supplements (contents, statuses, and timelines), click here.

Updates from other RBM working groups

Case Management: Updates and initiative to review the current global malaria case management indicators
Dr. Elizabeth Juma, WHO AFRO (remote)

Elizabeth provided the update of the Case Management Working Group. She stressed the purpose and objectives of the group, which are to minimize wasteful duplication, maximize synergies, and encourage harmonization and pooling of efforts for faster uptake and scale-up of malaria case management strategies and interventions. She emphasized that the main objectives of the group mirror the function of RBM Partnership. She also underscored the need to review case management indicators. The Case Management Working Group had proposed in 2021 that all stakeholders undertake a critical evaluation of the current and potential new indicators for better guidance for countries on the collection and use of case management indicators for action. For details of the presentation, click here.

Malaria in Pregnancy (MiP) Working Group
Julie Gutman, Centers for Disease Control and Prevention (remote)

Julie updated the participants on the purpose of the MiP Working Group and how it aligns RBM partners on best practices and lessons learned in MiP programming to help achieve higher coverage in MiP interventions globally.

The MiP Working Group works in collaboration with the Multi-Sectoral Working Group, the Social and Behavior Change Working Group, the Vector Control Working Group, and SMERG. She concluded with a call to action tagged: Speed Up, Scale Up IPTp! For details of the presentation, click here.

Multi-Sectoral Working Group
Albaster Graham, UN Habitat Switzerland (remote)

Albaster outlined the Multi-Sectoral Working Group activities, which included finalization of multi-sectoral framework documents, further development of two flagship programs, and resource mobilization, etc. Albaster stated that there is increased interaction at the human-animal-environmental interface and thus a call to focus on urban and peri-urban settings, work with city leaders, and thus, the creation of Healthy Cities, Healthy People initiatives. He highlighted the Multi-Sectoral Working Group's next steps. For details of the presentation, click here.

Vector Control Working Group
Justin McBeath, UK (remote)

Justin briefed participants on three main elements around which the Vector Control Working Group is organized: enhancing the impact of core interventions, expanding the vector control toolbox, and implementing the global vector control response. Justin highlighted some observations from *Anopheles stephensi* focus meetings and ways the Vector Control Working Group could provide support. He finished up with some changes in workstream leadership: Allison Tatarsky is stepping down, and Derric Nimmo from IVCC will now join Sheila Barasa as Technical Manager. Mark Hoppe is stepping down and will be replaced by Prof. Anne Wilson from the Liverpool School of Tropical Medicine. For more details on this presentation, click here.
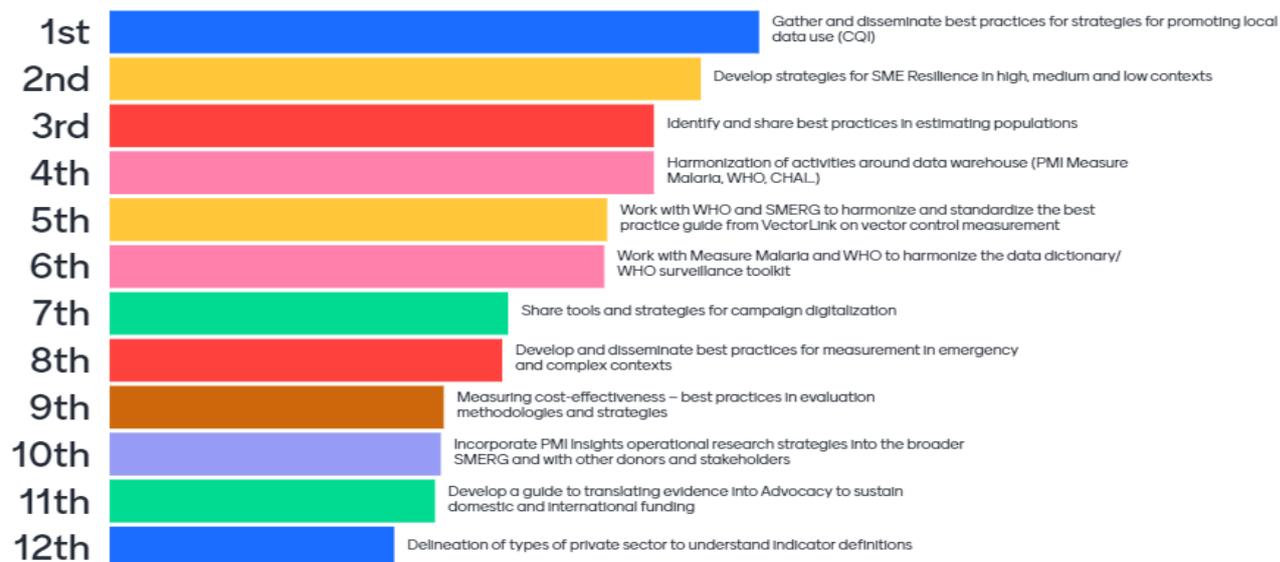
RBM Country/Regional Support Partner Committee (CRSPC) update
Dr. Peter Olumese, WHO, and Melanie Renshaw, ALMA (remote)

In their presentation, Melanie and Peter reminded participants of the purpose of CRSPC, which is to provide a platform to engage the RBM Partnership community in coordinating support to countries and regions as they execute their malaria control and elimination programs. They underscored that support is based on country demand and is tailored to suit the requirements, existing capacity, and partner support, and CRSPC operates a triage mechanism to ensure that support does not compete with or duplicate existing mechanisms that are working effectively. Typically, consultants are sourced from within the region where they are working. They outlined the roles and responsibilities of CRSPC and pointed that COVID-19 continues to disrupt malaria control programs, and commodity delivery times continue to be at least two months longer than before COVID-19. Priority activities for 2022 include technical strategies and implementation plans, implementation support, and resource mobilization. They concluded the presentation with a summary of the priority areas for CRSPC in 2022. For more details, click here.

Review action items for SMERG malaria
Molly Robertson facilitated this discussion as she led participants to select and prioritize the action points gathered from all the discussions during the various sessions. These priority areas were grouped into two categories—priority areas for partners and priority areas for NMCPs that SMERG should focus on over the next six months. The results from the mentimeter poll and the action points for further ranking according to priority are as follows:

1st	Gather and disseminate best practices for strategies for promoting local data use (CQI)
2nd	Develop strategies for SME Resilience in high, medium and low contexts
3rd	Identify and share best practices in estimating populations
4th	Harmonization of activities around data warehouse (PMI Measure Malaria, WHO, CHAI...)
5th	Work with WHO and SMERG to harmonize and standardize the best practice guide from VectorLink on vector control measurement
6th	Work with Measure Malaria and WHO to harmonize the data dictionary/ WHO surveillance toolkit
7th	Share tools and strategies for campaign digitalization
8th	Develop and disseminate best practices for measurement in emergency and complex contexts
9th	Measuring cost-effectiveness – best practices in evaluation methodologies and strategies
10th	Incorporate PMI Insights operational research strategies into the broader SMERG and with other donors and stakeholders
11th	Develop a guide to translating evidence into Advocacy to sustain domestic and international funding
12th	Delineation of types of private sector to understand indicator definitions

Action Points of the Thirty-Third Meeting of the RBM Partnership SMERG 17–20 May 2022

Issues		Suggested SMERG Action	Remarks (Comments, observations, recommendations if any)
1.	Malaria data are collected at village level but aggregated at the sector level in HMIS. Data below the sector level are available in paper format.	• Support electronic reporting at community level	• Country is piloting electronic system to enable digital capture of data at the village level
Subtheme 1: All-inclusive malaria SME approach			
1.	Government ownership of the proposed digital solutions (e.g., upscale) Mobile reporting—how to cover the cost for the IT, especially when expanding to the community level. Lack of digital road map.	• Develop an overall generic road map that can be adapted at the country level	• Lack of sustained funding mentioned as one of the challenges in implementing digital solutions to full scale • Embed sustainability plan into project activities • Involve government at startup and consider what is possible during transition
2.	Collaboration with WHO/GMP, especially in provision of guidance	• SMERG co-chairs and RBM leadership to follow up with WHO/GMP	
3.	Engagement of private sector in malaria SME. There is a need to	• Delineate types of private sector to understand indicator definitions	

Issues		Suggested SMERG Action	Remarks (Comments, observations, recommendations if any)
	enhance reporting by the private sector.	• Develop a guide on how to enhance integration of private sector data	
4	Effective monitoring of entomology data to better inform allocation of type of nets (standard, PBO, and G2) and assess effects	• Develop potential guide on how to countries can effectively monitor—collaborate with Vector Control Working Group • Work with WHO and SMERG to harmonize and standardize the best practice guide from VectorLink on vector control measurement	
5	Challenges in measuring and health care access and service coverage at the granular level, especially around health facility catchment areas because of lack of precise estimate of populations	• Identify and share best practices in estimating populations, especially around health facility catchment areas • Leverage the work under Measure Malaria on geospatial modeling of health care access to improve interpretation of routine surveillance data to develop a guide	
Subtheme 2: Malaria SME in the context of specific intervention—protocol, tools, process, and indicators			
1.	Suboptimal use of malaria information at local level despite availability of the tools and dashboards. What needs to be done to enhance data use and spur action at this level?	• Define strategies for promoting data use at local level, building on MEASURE Evaluation data use plan/guide • Gather and disseminate best practices for strategies for promoting local data use	
Subtheme 3: Accurately measuring malaria service/intervention coverage and impact			
1.	Extensive and comprehensive determination of operational research and program evaluation priorities by PMI Insight. Who is leading this work? Feeding back the information to NMCP.	• Incorporate the strategies and next steps into SMERG • Define process to support NMCP in developing or setting operational research priorities regularly • Incorporate PMI Insights operational research	

Issues	Suggested SMERG Action	Remarks *(Comments, observations, recommendations if any)*
	strategies into the broader SMERG and with other donors and stakeholders	
2. Notable duplication of activities (e.g., surveillance system assessment) is already happening although is prioritized in operational research questions	• Use of RBM dashboard by partners to share and learn of planned and ongoing work or activities to avoid duplication • Conduct effectiveness evaluation methodologies and strategies (what has been done and what is needed—how to coordinate) • Harmonize activities around data warehouse (PMI Measure Malaria, WHO, CHAI…)	
3. Incorporating information from observational studies when evaluating impact of interventions (e.g., on malaria rebound)	• Explore broader guidance on evidence synthesis • Evaluations of this nature require "extensive" peer review by malaria groups such as SMERG, especially if findings would inform rollout of new interventions	• Author recommended extended follow-up of cases in clinical trials • In addition to use of observational studies, concerns expressed on conclusion on risk of malaria rebound and effectiveness of the interventions assessed
4. CIMS generated a lot of interest, especially on its use during mass net campaigns. This was in reference to accurately estimating targeted population and quantifying the mosquito nets required for the campaigns that seems to be a gap.	• Provide guidance on strategies and tools for campaign digitalization • Handle changes in population (denominators) • Share tools and strategies for campaign digitalization	• CIMS gives more accurate of estimation of coverage of IRS compared to previous tools. • Concerns about the 80–85% target for IRS coverage. What is the effectiveness of IRS with this coverage?
5 Defining clear subnational targets, not all align to the national level	• Define guide to support countries on defining subnational targets	
6 Challenges in measuring IPTp coverage—what is the effective geo level, timeframe?	• Develop and disseminate best practices for measurement in emergency and complex contexts	

Issues	Suggested SMERG Action	Remarks *(Comments, observations, recommendations if any)*
1. A data dictionary will provide documentation of the changes in data elements and indicators in routine reporting systems over time. The guide for developing the dictionary will be useful to countries.	• SMERG to be involved in reviewing or updating the guide • Harmonize activities (PMM, WHO, CHAI)	• PMM to verify implementation of similar digital solution by CHAI and identify opportunities for collaboration
2. Need for guidance on setting up a resilient malaria SME system. Is there a difference in what is to be done across the different transmission settings (high, moderate, low)?	• Form a taskforce within SMERG to spearhead development of the guidance document	• Should include component on challenges with malaria SME in emergency contexts and changing climate
Subtheme 5: Updates on RBM and SMERG business		
1 Case Management Working Group provided an update on the need to review malaria case management indicators. SMERG's input was required, and the co-chair suggested that this be coordinated through a taskforce.	• Coordinate with the working group to provide SMERG inputs to the review	

Closing remarks and next meeting

The SMERG co-chairs thanked the SMERG Secretariat and all the participants who attended the meeting in person and online. They recalled that it was the first in-person meeting after three years due to the pandemic. The meeting was a huge success, as expressed by participants in the satisfaction poll shared at the end of the meeting. A follow-up meeting was planned around the period of the American Journal of Tropical Medicine and Hygiene conference to be held in Seattle, WA, USA, in November 2022.

Appendix

List of Participants

S/N	First Name	Last Name	Institution	Position	Country of Residence
Co-chairs					
	Medoune	Ndiop	NMCP Senegal	Co-Chair SMERG	Senegal
	Molly	Robertson	The Global Fund	Sr Specialist, Malaria	Switzerland
SMERG Secretariat					
	Yazoume	Ye	ICF/Measure Malaria	Vice President, Malaria Surveillance and Research	USA
	Patricia	Mbah Nchamukong	ICF/Measure Malaria	Coordinator and Communication Specialist	USA
Participants					
1.	Abdul-wahid	Al-mafazy	RTI International	MERLA Director	Tanzania
2.	Abimana	Marie Claire	USAID/Ingobyi Activity	Malaria Advisor	Rwanda
3.	Aicha	Mohamed Ali	PNUD	Monitoring & Evaluation Officer	Chad
4.	Aimable	Mbituyumuremy	NMCP Rwanda	Manager	Rwanda
5.	Anaclet	Mugabonake	Intrahealth International-USAID/Ingobyi Activities	Malaria Specialist	Rwanda
6.	Annie	Mutoni	PSI BURUNDI	Senior Malaria Advisor/USAID-TUBITEHO PROJECT	BURUNDI
7.	Arantxa	Roca-Feltrer	Malaria Consortium	Head of SM&E	Mozambique
8.	Baltazar	Candrinho	Ministry of Health Mozambique	NMCP Director	Mozambique
9.	Bolanle	Olapeju	JHU	Assistant Scientist	United States
10.	Celine	Kanyoge	UNICEF	Health officer	Burundi
11.	Chanelle	Muhoza	PNLP Burundi	Chef de service Prise en charge des cas	Burundi
12.	Chishala	Bwalya	Path	Monitoring, Evaluation and Learning Officer	Zambia
13.	Christine	Nyirahabimana	USAID / IntraHealth / Ingibyi Activity	Malaria Specialist	Rwanda
14.	Claude	Mambo Muvunyi	Rwanda Biomedical Center, Rwanda	Director	Rwanda
15.	CLEMENT	Nguessan Kouakou	UNDP	Programme Specialist	BURUNDI
16.	David	Galick	MCDI	M&E advisor	Equatorial guinea
17.	Davy	Ratovondramamy	NMCP	Surveillance, Monitor & Evaluation Officer	Madagascar
18.	Djamine	Nontena	World Vision	Monitoring and Evaluation Manager	Central African Republic

S/N	First Name	Last Name	Institution	Position	Country of Residence
19.	Ekoyol Ekobe	Germaine	NMCP	Chief Case Management	CAMEROON
20.	Emmanuel	Hakizimana	Malaria and Other Parasitic Diseases Control Division/Rwanda Biomedical Center	Director of Vector Control Unit	Rwanda
21.	Erin	Eckert	RTI International	Director, Infectious Disease	United States
22.	Giovanni	Dusabe	IFRC	Senior Officer	Switzerland
23.	Hellen	Gatakaa	PMI Measure Malaria	Health Data Scientist	Kenya
24.	Ignace	Bimenyimana	UNDP Chad	GF Malaria Project Coordinator	Burundi
25.	Issakha Diar	Mahamat Saleh	National Malaria Control Program	coordinator	Tchad
26.	Jacqueline	Umunyana	IntraHealth International	Senior Malaria Specialist	Rwanda
27.	Jean Louis	Ndikumana Mangara	Rwanda Biomedical Center	Director of Prevention	Rwanda
28.	John	Painter	CDC-PMI	Epidemiologist	USA
29.	Karema	Corine	WHO Programme Advisory Group for Malaria Vaccine implementation	Member: WHO Programme Advisory Group for Malaria Vaccine	Rwanda
30.	Landrine	Mugisha	PNILP Burundi	Directeur Adjoint	Burundi
31.	Lubna	Nawai	FMOH	Technical officer	Sudan
32. n	Lubna	Nawaifedral	Federal Ministry of Health	Malaria Technical Officer	Sudan
33.	Lukusu	Raissa	PNUD	Monitoring & Evaluation Officer	Burundi
34.	Marcel	Manariyo	JHPIEGO	Senior Monitoring, Evaluation and Research Advisor	Rwanda
35.	Marsha	Deda	RBM Partnership	M&E Specialist	Switzerland
36.	Melody	Kalombo	Ministry of Health	Community Health Officer	Zambia
37.	Michael	Hainsworth	PATH	Senior M&E Officer	USA
38.	Michee	Kabera Semugunzu	RBC	Director of Epidemiology Unit	Rwanda
39.	Minani	Languide	PNILP Burundi	Head of the Key Population Unit	Burundi
40.	Mohamed Ali	Ali	ZAMEP	Program Manager	Tanzania-Zanzibar
41.	Monica	Golumbeanu	Swiss Tropical and Public Health Institute	Senior Scientific Collaborator	Switzerland
42.	Monica	de Cola	Malaria Consortium	Results Measurement Analyst	United Kingdom
43.	Moussa	Issai	PNLP tchad	Monitoring and Evaluation Officer	Tchad
44.	Moustapha	Cissé	Macepa/PATH	Malaria Deputy Director	Senegal
45.	Mwinyi	Khamis	Zanzibar Malaria Elimination Program	Head SBCC/ITNs Unit	Zanzibar/Tanzania

S/N	First Name	Last Name	Institution	Position	Country of Residence
46.	Olivier	Byicaza Nk	World Vision	Chief of Party	Central African Republic
47.	Perpetua	Uhomoibhi	National Malaria Elimination Programme Nigeria	National Coordinator	Nigeria
48.	Poppy	Farrow	Malaria Consortium	Senior Digital Health Specialist	UK
49.	Punam	Amratia	MAP	Senior Researcher	Australia
50.	Sarah	Burnett	PATH	Data Analyst	United States
51.	Sergio	Lopes	The MENTOR Initiative	Regional PM	Portugal
52.	Smita	Das	PATH	Surveillance M&E Officer	USA
53.	Sompwe	Eric	Ministry of Health/NMCP	Director	D. R. Congo
54.	Tamsin	lee	Swiss TPH	Senior Scientific Collaborator	Switzerland
55.	Uwimana	Aline	Rwanda Biomedical Center/Malaria Program	Director of Malaria Case Management Unit	Rwanda
56.	Wahjib	Mohammed	National Malaria Elimination Programme	SM&E, Head	Ghana

Photos: 33rd SMERG Meeting, Kigali, Rwanda

All Photos: SMERG Secretariat

Opening of the 33rd SMERG Meeting

Study Tour: Visit to the District

Study Tour: Visit to the Community, SMERG Members with Volunteer and Interpreter

Presentation by Dr. Aimable, NMCP Rwanda

French Breakout Session   Engaged SMERG Participants