# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>i</td>
</tr>
<tr>
<td>Acronyms</td>
<td>iii</td>
</tr>
<tr>
<td>Summary</td>
<td>1</td>
</tr>
<tr>
<td>Background</td>
<td>2</td>
</tr>
<tr>
<td>Objectives</td>
<td>2</td>
</tr>
<tr>
<td>Executive summary</td>
<td>3</td>
</tr>
<tr>
<td>Topic 1: Improving access to hard-to-reach populations</td>
<td>3</td>
</tr>
<tr>
<td>Topic 2: Ensuring the availability of high-quality drugs and diagnostics</td>
<td>3</td>
</tr>
<tr>
<td>Topic 3: Strengthening collaboration and partnership coordination</td>
<td>3</td>
</tr>
<tr>
<td>Topic 4: Improving surveillance in the GMS</td>
<td>4</td>
</tr>
<tr>
<td>Recommendations</td>
<td>4</td>
</tr>
<tr>
<td>Recommendations for GMS Member States</td>
<td>4</td>
</tr>
<tr>
<td>Recommendations for WHO</td>
<td>5</td>
</tr>
<tr>
<td>Opening remarks</td>
<td>6</td>
</tr>
<tr>
<td>GMS updates</td>
<td>6</td>
</tr>
<tr>
<td>Objectives of the partners’ forum and overview of the Mekong Malaria Elimination Programme</td>
<td>6</td>
</tr>
<tr>
<td>Status of drug resistance in the GMS</td>
<td>6</td>
</tr>
<tr>
<td>Country updates</td>
<td>6</td>
</tr>
<tr>
<td>Cambodia</td>
<td>6</td>
</tr>
<tr>
<td>China</td>
<td>7</td>
</tr>
<tr>
<td>Lao People’s Democratic Republic</td>
<td>8</td>
</tr>
<tr>
<td>Myanmar</td>
<td>8</td>
</tr>
<tr>
<td>Thailand</td>
<td>9</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>9</td>
</tr>
<tr>
<td>Updates on malaria financing</td>
<td>10</td>
</tr>
<tr>
<td>Update on the Global Fund Regional Artemisinin-resistance Initiative (RAI) and Regional Steering Committee Meeting</td>
<td>10</td>
</tr>
<tr>
<td>Topic 1: Improving access to hard-to-reach populations</td>
<td>10</td>
</tr>
<tr>
<td>Country presentations</td>
<td>10</td>
</tr>
<tr>
<td>Cambodia</td>
<td>10</td>
</tr>
<tr>
<td>Myanmar</td>
<td>10</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>11</td>
</tr>
<tr>
<td>Case studies</td>
<td>11</td>
</tr>
<tr>
<td>Supporting the last-mile operation: polio case study</td>
<td>11</td>
</tr>
<tr>
<td>Eliminating malaria: Global overview and case studies outside the GMS</td>
<td>11</td>
</tr>
<tr>
<td>Project updates</td>
<td>12</td>
</tr>
<tr>
<td>Seek and find: evolving approaches to serving hard-to-reach groups in four countries</td>
<td>12</td>
</tr>
<tr>
<td>Access to hard-to-reach populations</td>
<td>12</td>
</tr>
<tr>
<td>Topic 2: Ensuring the availability of high quality drugs and diagnostics</td>
<td>12</td>
</tr>
<tr>
<td>Plan for RAI2E regional pharmaceutical component, 2018–2020</td>
<td>12</td>
</tr>
</tbody>
</table>
Eliminating in the dark: the importance of ongoing drug quality monitoring to inform responsive malaria elimination strategies

Topic 3: Strengthening collaboration and partnership coordination

Partnership coordination in Myanmar
WHO’s role to facilitate partnership coordination and collaboration
Asia Pacific Leaders Malaria Alliance’s work to strengthen political leadership and financing for malaria
Updates on RAI grant implementation

Topic 4: Improving surveillance in the GMS

Country presentations
Cambodia
China
Lao People’s Democratic Republic
Myanmar
Thailand
Viet Nam

Country discussions

Updates on data-sharing in the GMS
Malaria elimination database (MEDB) for the GMS under RAI2E
Progress and challenges of the GMS Regional Data Sharing Platform

Partners’ work to support surveillance in GMS countries
Response-driven surveillance innovations and iterations
Supporting malaria surveillance in the GMS
High-risk populations surveillance and response
Surveillance guidance and tools
Translating epidemiological analysis into action: update from MORU

Discussion: Improving surveillance for malaria elimination in the GMS

Recommendations
Recommendations for GMS Member States
Recommendations for WHO

Conclusion

Appendices

Appendix 1 – Partners’ forum agenda
Objectives of the meeting
Programme schedule

Appendix 2 – List of participants
1. Government participants
2. International partners
3. Secretariat
<table>
<thead>
<tr>
<th>Acronyms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>artemisinin-based combination therapy</td>
</tr>
<tr>
<td>APLMA</td>
<td>Asia Pacific Leaders Malaria Alliance</td>
</tr>
<tr>
<td>BCC</td>
<td>behaviour change communication</td>
</tr>
<tr>
<td>CHAI</td>
<td>Clinton Health Access Initiative</td>
</tr>
<tr>
<td>CSO</td>
<td>civil society organization</td>
</tr>
<tr>
<td>DHA–PIP</td>
<td>dihydroartemisinin + piperaquine</td>
</tr>
<tr>
<td>DHIS</td>
<td>district health information system</td>
</tr>
<tr>
<td>GF</td>
<td>Global Fund to Fight AIDS, Tuberculosis and Malaria</td>
</tr>
<tr>
<td>GMS</td>
<td>Greater Mekong Subregion</td>
</tr>
<tr>
<td>HF</td>
<td>health facility</td>
</tr>
<tr>
<td>HPA</td>
<td>Health Poverty Action</td>
</tr>
<tr>
<td>IEC</td>
<td>information, education and communication</td>
</tr>
<tr>
<td>IRS</td>
<td>indoor residual spraying</td>
</tr>
<tr>
<td>ITN</td>
<td>insecticide-treated net</td>
</tr>
<tr>
<td>LLIN</td>
<td>long-lasting insecticidal net</td>
</tr>
<tr>
<td>MME</td>
<td>Mekong Malaria Elimination</td>
</tr>
<tr>
<td>MMP</td>
<td>mobile and migrant population</td>
</tr>
<tr>
<td>MMW</td>
<td>mobile malaria worker</td>
</tr>
<tr>
<td>MOT</td>
<td>mobile outreach team</td>
</tr>
<tr>
<td>NMCP</td>
<td>National Malaria Control Programme</td>
</tr>
<tr>
<td>oAMT</td>
<td>oral artemisinin-based monotherapy</td>
</tr>
<tr>
<td>Pf</td>
<td><em>Plasmodium falciparum</em></td>
</tr>
<tr>
<td>PPM</td>
<td>public–private mix</td>
</tr>
<tr>
<td>PSI</td>
<td>Population Services International</td>
</tr>
<tr>
<td>Pv</td>
<td><em>Plasmodium vivax</em></td>
</tr>
<tr>
<td>RAI</td>
<td>Regional artemisinin-resistance Initiative</td>
</tr>
<tr>
<td>RAI2E</td>
<td>Regional artemisinin-resistance Initiative 2 Elimination</td>
</tr>
<tr>
<td>RDSP</td>
<td>regional data-sharing platform</td>
</tr>
<tr>
<td>RDT</td>
<td>rapid diagnostic test</td>
</tr>
<tr>
<td>TES</td>
<td>therapeutic efficacy studies</td>
</tr>
<tr>
<td>UCSF</td>
<td>University of California, San Francisco</td>
</tr>
<tr>
<td>UNOPS</td>
<td>United Nations Office for Project Services</td>
</tr>
<tr>
<td>VHV</td>
<td>village health volunteer</td>
</tr>
<tr>
<td>VHW</td>
<td>village health worker</td>
</tr>
<tr>
<td>VMW</td>
<td>village malaria worker</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
Summary

On 21–22 March 2018, representatives from the Greater Mekong Subregion (GMS) Member States – Cambodia, China, Lao People’s Democratic Republic, Myanmar, Thailand and Viet Nam met with partners to strengthen partnership coordination for malaria elimination in the Subregion. The Partners’ Forum was hosted by the World Health Organization (WHO) Mekong Malaria Elimination programme in Bangkok, Thailand. During the forum, country representatives, partners and WHO exchanged information on activities, shared best practices and discussed challenges in the GMS. Discussions centred around four key topics: improving access to hard-to-reach populations; ensuring the availability of high-quality drugs and diagnostics; strengthening collaboration and partnership coordination; and improving surveillance in the GMS. The outcomes from these discussions led to recommendations for Member States and WHO. These recommendations aim to further accelerate malaria elimination in the GMS toward the shared goal of a malaria-free Subregion by 2030.
Background

The Mekong Malaria Elimination (MME) Partners’ Forum was convened in Bangkok, Thailand in March 2018. The MME programme organized the Forum to share updates on different partners’ activities in the Greater Mekong Subregion (GMS). As a platform for information exchange, the Forum aimed to improve coordination by sharing lessons learnt from partners and country programmes.

Discussions during the Partners’ Forum were organized around four topics: improving access to hard-to-reach populations; ensuring the availability of high-quality drugs and diagnostics; strengthening collaboration and partnership coordination; and improving surveillance in the GMS. A variety of cases studies were presented from country programmes, GMS partners and World Health Organization (WHO). Common challenges as well as best practices were shared.

Forum participants emphasized the importance of partners sharing information, discussing issues and aligning activities to better meet country needs. The Forum followed shortly after the Global Fund Regional Steering Committee for the Regional Artemisinin Initiative (GF-RSC-RAI) meeting convened in Bangkok on 19–20 March 2018, where most partners and directors of national malaria control programmes were present.

In December 2017, GMS country representatives met at a high-level meeting in Nya Pyi Taw to discuss the Ministerial Call for Action to Eliminate Malaria in the Greater Mekong Subregion before 2030. The call for action includes the commitment to “strengthen national malaria elimination strategies and interventions and the coordination of partners and stakeholders”. The Call for Action was later signed by GMS ministers of health during the Seventy-first World Health Assembly in May 2018.

The MME programme was launched in 2017 to support the Strategy for Malaria Elimination in the GMS (2015–2030), endorsed by the GMS Member States at the Sixty-eighth World Health Assembly. The programme evolved from the previous Emergency Response to Artemisinin Resistance hub, which supported GMS country activities from 2013 to 2016.

The GMS elimination strategy aims to eliminate Plasmodium falciparum from the Subregion by 2025 and all species of human malaria by 2030. The MME subregional team in Phnom Penh supports this strategy by facilitating coordination and dialogue among partners, communicating with external stakeholders and coordinating cross-border initiatives.

Objectives

To strengthen partnership coordination toward malaria elimination in the GMS through:

- exchanging information (including activities and results) as well as best practices across partners;
- discussing the major challenges and gaps toward malaria elimination; and
- discussing ways to strengthen collaboration and coordination of activities at regional and country levels to best meet subregional and country needs, especially with regards to surveillance.
Executive summary

Topic 1: Improving access to hard-to-reach populations

Countries highlighted that access to mobile/remote populations such as forest workers and seasonal workers is one of the most significant challenges for malaria elimination. Village malaria workers, malaria posts (and malaria corners), and collaboration with the private sector and military were highlighted as particularly important to improving access.

Case studies strongly suggested that surveillance, investigation and immediate on the ground actions are critical to controlling an outbreak. They also emphasized the importance of local problem solving based on facts. Population Services International (PSI) highlighted the need to “implement, reflect and iterate”. Capacity-building for enabling local problem solving was also highlighted, especially given the variance across local situations. To improve local capacity/problem solving actions, World Health Organization (WHO) and partners are requested to provide support for local operations in addition to their technical support.

The Global Fund to Fight AIDS, Tuberculosis and Malaria (GF) launched a 242 million US dollars Regional Artemisinin Initiative-2 Elimination (RAI2E) grant to five GMS countries and seven regional components. The RAI2E grant is coordinated by the Regional Steering Committee (RSC) and Country Coordinating Mechanisms.

In the RSC meeting on 19–20 March 2018, the Committee discussed how to ensure oversight, timely bottleneck resolutions and outbreak response. It emphasized the importance of multi-sector engagement, i.e. the private sector, civil society organizations and the military as well as sustainability and transition beyond 2020, especially essential functions like community volunteers.

There is an opportunity for reallocating unused funding around mid-2019 for the programme that is performing well.

Topic 2: Ensuring the availability of high-quality drugs and diagnostics

The studies suggested that GMS countries have made significant progress in ensuring drug quality (e.g. withdrawing oral artemisinin-based monotherapy [oAMT], and regulating substandard quality drugs especially in the private sector) with some remaining issues. WHO is helping and supporting countries to address these issues through regulatory system strengthening and the development of national plans to address substandard and falsified products.

Topic 3: Strengthening collaboration and partnership coordination

Partners are crucial to strengthening and supporting national malaria control programmes (supported by WHO).

It is important for partners to work closely on exchanging information, discussing issues and aligning activities to meet country needs.

Myanmar’s experience indicates that partnership coordination works best when the country follows a systematic approach to coordinating partners, e.g. providing a platform for information exchange and decision-making, as in Myanmar’s Malaria Technical and Strategy Group, with all partners operating under its guidance.

The United Nations Office for Project Services (UNOPS) reiterated that the national programme should lead partnership coordination under RAI2E. UNOPS and the GF are willing to accommodate the countries’ requests for reallocation of the grant, if necessary.

Asia Pacific Leaders Malaria Alliance (APLMA) emphasized the importance of continued communication about success, e.g. averted cases and advocacy for financial and technical support for
elimination. Such advocacy is especially important when the disease burden is significantly reduced and malaria is no longer a deadly disease. Advocating for increased government spending in malaria programmes for all GMS countries is critical, given the uncertainty of the GF funding levels beyond 2020. Increased domestic funding will also ensure more ownership by countries.

**Topic 4: Improving surveillance in the GMS**

While countries are at different stages of the elimination programme, and hence have different surveillance priorities (e.g. control versus elimination), all countries have a guideline/standard operating procedure (SOP) for case/foci investigation (similar to China’s 1-3-7 surveillance strategy) and an electronic data reporting system. All countries have implemented case-based surveillance in at least some areas of the country.

Countries highlighted some common challenges: integration of data from private and other sectors (e.g. military); expansion of case-based surveillance; timely notification and investigation; response in remote areas; and integration with other disease programmes.

Under the RAI2E, WHO will provide support for GMS countries to strengthen surveillance capacity, e.g. data collection, reporting and use.

PSI experience demonstrates that ease of reporting is important for encouraging private sector engagement. Technology must be fit for purpose, user-centred and scalable.

Malaria Consortium emphasized the use of appropriate surveillance measures and the investigation of cross-border malaria to enable identification and response to foci on both sides of the border.

The University of California, San Francisco (UCSF) indicated that flexible responses based on formative assessments (e.g. population movement) and community engagement (e.g. peer navigators) are effective for improving surveillance. A case–control study is ongoing to assess the impact of peer navigators in Lao People’s Democratic Republic.

WHO will shortly publish surveillance guidelines. WHO is also developing tools on the health data collaborative and digital solutions for malaria elimination.

The Mahidol Oxford Tropical Medicine Research Unit (MORU) has indicated various possibilities to further utilize available surveillance data (e.g. stratification, identification of hot spots, correlation with climate data and combination with operational data) and other data sources (use of satellite images, mobile phone data and genetic data).

**Recommendations**

**Recommendations for GMS Member States**

Member States should:

- consider the further use of the regional data-sharing platform to facilitate cross-border collaboration;
- monitor the malaria epidemiology regularly to be able to detect and respond to outbreaks in a timely manner;
- note and explore the possibility to reallocate RAI2E funds in mid-2019 when UNOPS and the Global Fund will assess the savings of RAI2E and provide unspent funding to the well-performing projects;

---

1 For the People’s Republic of China this would include the areas of Yunnan Province and Guangxi Zhuang Autonomous Region.
• continue to work on strengthening the capacity of national regulatory authorities to ensure timely availability of drugs.

Recommendations for WHO

• WHO and partners should work with Member States to improve surveillance and response capacity to finish the last mile of malaria elimination.
• WHO and Member States should consider the streamlining of reporting to the World Malaria Report, especially for surveillance data already available in the WHO regional data sharing platform.
• WHO, partners and research institutions should consider organizing a forum for disseminating and discussing GMS research findings.

Participants of the WHO Mekong Malaria Elimination Partners’ Forum meet in Bangkok
Day 1 (21 March 2018) – Bangkok, Thailand

Opening remarks

Dr Anupong Sujariyakul, Representative of the Ministry of Public Health, Thailand, delivered the welcome address to the Partners’ Forum participants. The address was followed by opening remarks from Dr Deyer Gopinath, Medical Officer, World Health Organization (WHO) on behalf of the WHO Representative to Thailand.

Dr Eva Maria Christophel, Regional Advisor, Malaria, WHO Regional Office for South-East Asia gave the opening remarks on behalf of the Regional Director.

Dr Anupong Sujariyakul, Dr Aung Thi and Dr Pascal Ringwald were nominated as Co-chairs for Day 1.

GMS updates

Objectives of the partners’ forum and overview of the Mekong Malaria Elimination Programme

Dr Hiromasa Okayasu, Coordinator, Mekong Malaria Elimination (MME) Programme, WHO

Dr Okayasu presented an overview on the epidemiology of malaria in the Greater Mekong Subregion (GMS) in 2017 (including case count, case distribution and other variables like percentage of \( P. falciparum \) cases). Compared to 2016, the number of cases increased in Cambodia and Viet Nam in 2017. The number of cases in the second half of 2017 was also higher in Lao People’s Democratic Republic compared to the same time period in 2016. Dr Okayasu described the major challenges facing GMS countries: securing political commitment and sustainable funding; providing services to mobile populations; addressing multidrug resistance; drug quality assurance and management; and improving surveillance. He presented the agenda and objectives of the Partners’ Forum, outlining the four main topics for discussion.

Status of drug resistance in the GMS

Dr Pascal Ringwald, Coordinator, Drug Efficacy and Response, Global Malaria Programme, WHO

Dr Ringwald presented an update on antimalarial drug resistance in the GMS. He gave an overview of treatment guidelines, definitions, consequences of artemisinin partial resistance, the relationship between ACT efficacy and molecular markers of artemisinin and partner drug resistance. Reviewing the rationale for elimination in the GMS, he highlighted data on the association found between molecular markers of artemisinin and piperazine resistance and dihydroartemisinin-piperaquine (DHA-PIP) efficacy in Cambodia. He also presented an overview of data from areas outside the GMS, including data on artemisinin partial resistance in South America and on artemisinin-based combination therapy (ACT) treatment failure rates in Africa. He concluded with four major points: data reaffirm the need for urgent and continued intensive regional malaria elimination in the GMS; surveillance for artemisinin and partner drug resistance needs to be strengthened; there is a critical need for surveillance outside the GMS for detecting potential de novo resistance or potential introduction of resistant parasites; and where surveillance signals a potential threat to leading ACTs, effective alternative ACTs should be identified and implemented before resistance reaches critical levels.

Country updates

Cambodia

Dr Chea Nguon, Deputy Director, National Centre for Parasitology Entomology and Malaria Control

In 2017, 54% of malaria cases were \( P. falciparum (Pf) \), 42% \( P. vivax (Pv) \) and 4% were mixed cases in Cambodia. Males in the age group of 15–49 years accounted for nearly 70% of all cases. The total
malaria case count (including health facilities [HFs], village malaria workers [VMWs], and public–private mix [PPM]) for 2017 represents the highest number of reported cases since 2011. Between August and December 2017, the number of malaria cases was higher compared to the same period in 2015 and 2016. Dr Nguon provided updates on VMW registrations (with e-payments and refresher training), the status of insecticide-treated net (ITN) distribution in 2017 and training conducted. The development of the Malaria Elimination Action Framework (MEAF) 2016–2020 and its core objectives were discussed. The country’s phased approach to elimination is based on the annual parasite incidence (API) of *Plasmodium falciparum* and mixed infections and evidence of drug resistance by operational district (OD). With this approach, ODs are stratified as elimination-targeted, transitional, burden reduction or non-endemic. Dr Nguon outlined a number of challenges: the early and prolonged rainy season in 2017; the case increase in 2017; delays in signing of contracts; mobile and migrant populations (MMPs); limited involvement of the private sector; limited human resources; payment mechanism causing delayed implementation of some activities (particularly VMWs); Regional Artemisinin-resistance Initiative (RAI) and New Funding Model (NFM) burn rates for 2017 of 64% and 53%, respectively; and complicated and slow decision processes for budgets at the subnational level. Dr Nguon explained the RAI progress update and the implementation arrangement of the core package (2018–2020) in Cambodia. He reviewed the roles of the implementing Sub-Recipients (SRs) (CSOs) as well as the structure of the GF funding flow and the e-payment modalities for VMW monthly meetings (starting from March 2018). Multiple ways forward were presented: implementing elimination in six provinces in 2018; strictly following the T3 policy of test, treat and track; addressing stock management issues and supply chain of commodities to avoid stock-out at the subnational level; re-operationalization of VMWs and close monitoring by all SRs in respective areas; data collection support via real-time phone/tablet app; data analysis/reporting support via web-based malaria information system (MIS) dashboard; foci management as a priority intervention; net distribution campaign before the rainy season; fully functioning provincial malaria elimination taskforce; and reviewing results of DHIS2 piloting by partners.

**China**

Dr Yan Jun, Division Chief, National Health and Family Commission

With the goal of eliminating malaria by the end of 2020, China has dramatically decreased indigenous malaria cases, with only two indigenous cases in 2016 and no indigenous cases reported in 2017. The risk of reintroduction from imported cases remains. Dr Jun presented their achievements: strong political commitment; intersectoral, regional and cross-country cooperation; universal access to free diagnosis and treatment; a real-time, web-based case reporting system; quarterly reports of malaria cases reviewed in 2017; and Shanghai passing sub-national verification. Their 1-3-7 strategy has been a major achievement, with 2017 reporting 100% rate of case reports within 1 day rate of laboratory detection, 99.66% rate of laboratory confirmation and 83.55% rate of epidemiological investigation within 3 days. Three major challenges were highlighted: sustained commitment, cross-border malaria and imported malaria. Ways forward were also described, such as: further strengthening and ensuring substantial and consistent funding; strengthening cooperation with neighbouring countries; capacity building for case management, surveillance and response; and vector control. Dr Jun concluded by quoting two major points from the *Ministerial Call for Action to Eliminate Malaria in the GMS before 2030* (signed by the GMS ministers of health at the World Health Assembly in May 2018): “transform malaria surveillance into a core intervention in each GMS country;” and “strengthen malaria surveillance systems and the expansion of case- and foci-based surveillance, management and response”.

*MME Programme Partners’ Forum* 7
Lao People’s Democratic Republic

Dr Sisavath Soutthaniraxay, Deputy Director, Communicable Disease Control Department, Ministry of Health

Dr Soutthaniraxay described the NSP elimination goals for 2016–2020, including the interruption of transmission of *Pf* in the north by 2018. He explained that although Lao People’s Democratic Republic has experienced spikes in transmission in recent years due to increased economic activity and outbreaks, significant progress toward elimination goals has been made. The 2017 data demonstrate that 70% of cases were male, 90% were over 5 years of age; 51% cases were *Pv* and 49% were *Pf* cases. He gave an epidemiological update, noting that cases in Savannakhet province increased by 60% in 2017 due to the outbreak in Nong District. Savannakhet was the only province to have increased cases in 2017. He also noted that while nationally the cases decreased in 2017, the percentage of *Pf* cases increased in that year. Major achievements have been: strong political engagement; introduction of low single dose primaquine for *Pf* gametocyte tx; approval of the Food and Drug Department (FDD) and Ministry of Health (MoH) to use primaquine in *Pv* radical treatment; increased engagement of PPM for malaria services and the launching of DHIS2 malaria case-based surveillance. Current challenges are the spread of artemisinin and partner drug resistance (after latest polymerase chain reaction [PCR] and therapeutic efficacy studies [TES] results); the rollout of single low dose primaquine at all service delivery levels (including the community); primaquine rollout for *Pv* patients up to district facilities only (but not yet at community level); capacity-building to extract, analyse, interpret and take action on DHIS2 data; and insufficient funding. Four areas were highlighted for the way forward: improving data accuracy and staff capacity for analysing data for operations (via routine supervision for staff on DHIS2 functions); rolling out case-based surveillance in northern provinces and transitioning data collection in southern provinces from aggregated to line listed; supporting integration of the supply chain management system, e.g. developing stock-out monitoring tools in DHIS2 for hospitals and health centres; and increased private sector engagement. The rolling out of case-based surveillance in the north includes the phased implementation of notification, investigation and response tools and an elimination database in 13 northern provinces in 2018. The 2017–2018 PPM network expansion includes two southern provinces in Q4 2017 and five northern provinces in Q1 2018.

Myanmar

Dr Aung Thi, Deputy Director, Malaria, Department of Public Health, Ministry of Health and Sports

Dr Thi noted the substantial progress achieved and the high level of political commitment and financial commitment by the government and partners in Myanmar. He reviewed the progress on short-term goals and targets of the Malaria National Strategic Plan (2016–2020). By 2017, one of their targets was a system established at national and subnational levels to initiate case-based surveillance in low transmission settings. Dr Thi presented updates on that target, such as the tablet case-based DHIS2 which is in a pilot phase in two townships and the mobile case-based reporting (DHIS2) for village health volunteers (through support of Save the Children and University Research Co. [URC]). Another target for 2018 is robust epidemiological surveillance to be established in areas of high burden, including case reporting from the village level. The National Malaria Control Programme (NMCP) has case-based electronic records for all states and region, with around 17,000 village health volunteers deployed in high-burden areas. The remaining challenges include: elimination in conflict areas; MMPs; sustaining vector control in areas of low transmission and decreased funding; technical and resource capacity for case-based surveillance; delays in partners submitting data (from 1 to 6 months) and partners not submitting case-based data; and defence services and private sector data that are not included in routine surveillance. The ongoing efforts of Myanmar include mandatory malaria case notification, improving service coverage, e.g. partnering with ethnic health organizations to cover conflict areas and hard-to-reach areas, expanding surveillance to other sectors, e.g. private, defence services and nongovernment control areas and scaling up of case-based district health information system (DHIS2).
**Thailand**

Dr Prayuth Sudathip, Malaria Programme Manager, Bureau of Vector Borne Diseases, Department of Disease Control, Ministry of Public Health, Thailand

Dr Sudathip reviewed the most recent malaria data from October 2017 to March 2018. Of the 2901 confirmed cases (58% reduction), 62% of cases were Thai and 28% were non-Thai; 82% were *Pv* and 12% were *Pf* cases; 68% were male and 71% were over 15 years of age. During that time period, 33% of cases were classified as imported and 415 active foci were identified (56% reduced). Dr Sudathip gave an overview of their 1-3-7 strategy for case notification, investigation and response. Two key interventions from the malaria elimination strategy for 2017–2026 were highlighted: real-time notification, investigation and response and active case finding. Major challenges towards elimination are limited financing and decentralization of the vertical programme. Ways forward for financing include advocating for increased domestic funds (government and private sector) and engagement with local organizations to invest in foci management. For decentralization, ways forward will involve integration of malaria activities into the general health system, with relevant ministries and local authorities implementing appropriate malaria activities. Other major challenges are MMPs and cross-border issues; drug resistance; and management in provinces with security issues. Partnerships with civil society organizations (CSOs) in active foci communities and worksites, harmonization and implementation of the malaria action plan with neighbouring countries, integrated drug efficacy surveillance and improved adherence to ACTs through supervised treatment and complete follow-up and engagement of existing local religious associations and relevant ministries for provinces with unrest are important ways forward.

**Viet Nam**

Dr Tran Quang Phuc, Head of Planning Department, National Institute of Malariology, Parasitology and Entomology

Viet Nam has made significant progress in the last 10 years. Major achievements in programme management include more than 95% of villages in remote and endemic areas having trained village health workers (VHWs), all districts having a mobile preventive medicine and malaria team and strong political commitment. Surveillance progress includes the strategy of investigating and responding to all cases within 7 days, 95% of health facilities having been provided with equipment for malaria diagnosis and 95% of *Pf* cases receiving ACT treatment. Several challenges were noted: the majority of cases being present in hard-to-reach populations, e.g. field workers, forest goers and MMPs; ACT resistance (failure rate with increasing insecticide resistance); limited involvement of the private sector; lack of awareness by local authorities and communities in context of a low malaria burden; and decreasing domestic funding for malaria. Dr Phuc described the areas of priority in case management: screening people from endemic areas; improving performance at peripheral levels (community health centres [CHCs], VHWs); improving engagement and oversight among private sector service providers; and devising strategies to improve access to hard-to-reach populations for diagnosis and treatment. Vector control, operations research (like personal protection tools for MMPs), enhancing cross-border collaboration and domestic and international resource mobilization for elimination were also mentioned as areas of priority. Dr Phuc gave an overview of the expected support from international partners with regard to advocacy for increased domestic and international resources, an elimination-capable malaria surveillance and response system, targeted interventions for high-risk groups, continued monitoring of efficacy of ACTs and regional response for cross-border elimination.
Updates on malaria financing

Update on the Global Fund Regional Artemisinin-resistance Initiative (RAI) and Regional Steering Committee Meeting

Ms Amelie Joubert, Executive Secretary, RAI-Regional Steering Committee Secretariat

Ms Joubert reviewed the GF malaria financing in the GMS, highlighting the new funding cycle of RAI2E from 2018 to 2020 for Cambodia, Lao People’s Democratic Republic, Myanmar, Thailand, Viet Nam and the RAI inter-country/regional funding. She also explained the funding distribution by intervention (case management; programme management; Resilient and Sustainable Systems for Health (RSSH) or vector control). For the regional component, she described the activity overview in terms of the eight package themes (services for hard-to-reach populations; operational research; access to health commodities/ACTs; regional surveillance and data-sharing; antimalarial drug efficacy; regional multisectoral collaboration; and Regional Steering Committee [RSC] Secretariat and independent monitoring panel). She also described the governance structure at the regional and country levels, including the reporting mechanism. Key topics from the RSC meeting (19–20 March 2018) were shared: ensuring support to countries for timely outbreak response; implementation oversight and supporting bottleneck resolution; optimizing use of funds/reallocation mechanisms; multisectoral engagement (e.g. CSOs, military); and sustainability and transition beyond 2020.

Topic 1: Improving access to hard-to-reach populations

Country presentations

Cambodia

Dr Chea Huch, Deputy Director, National Center for Parasitology, Entomology and Malaria Control

Dr Huch spoke on Cambodia’s training manual for MMPs (expected to receive MoH approval in the coming weeks) as well as the strategic plan targeting MMPs. He discussed results from a mobile and migrant survey conducted in 2017, including data on health-seeking behaviour, types of providers used and net coverage. For Cambodia’s operational interventions, Dr Huch focused on the identification and mapping of hotspots. In identifying hotspots, MMP worksites, e.g. farms, road construction sites, mining sites and hydroelectric sites are considered like villages. Response activities involve the identification of touch points which MMPs pass through and where malaria services are provided. Dr Huch described lessons learnt from implementing partners, e.g. response activities at MMP hotspots, targeting plantation workers and cross-border migrants; challenges, e.g. identifying entry and exit points and regular information-sharing on cross-border activities; and ways forward, e.g. increasing MMP accessibility though physical accessibility, financial accessibility and quality services.

Myanmar

Dr Thandar Lwin, Deputy Director General, Disease Control

Dr Lwin discussed the network of 18 000 village health volunteers (VHVs), noting the ways in which the volunteers provide access to malaria services. VHVs contribute to identifying around 50% of malaria cases and help provide accessibility to conflict areas. She also presented the mapping of 26 implementing partners by township, which helps to identify overlaps. Malaria posts, geo-tagging of worksites and screening points were all discussed in relation to reaching MMPs. More than 25 000 individuals were examined in 2016 at 32 screening points, strategically placed at border crossings., She noted the importance of scaling up private sector engagement and of malaria becoming a notifiable disease. She concluded on the note that “our journey to end malaria is difficult, but not impossible”.

MME Programme Partners’ Forum 10
**Viet Nam**

Dr Nguyen Quy Anh, Deputy Director, National Institute for Malariology, Parasitology and Entomology

Dr Anh noted that currently there are only 4500 confirmed cases per year and that more than two thirds of the cases are in mobile populations. He described the cases as concentrated in the central highlands, border areas and forested areas. For malaria services, he described the VHW network, the network of 180 malaria posts (under the RAI grant) and the mobile outreach teams (MOTs). He discussed plans to implement malaria corners and to expand malaria posts under the RAI2E grant. He also discussed the plans for community malaria action teams. Challenges included the lack of human resources and funding, especially given that the government cannot provide salaries to those outside of government staff.

**Case studies**

**Supporting the last-mile operation: polio case study**

Dr Mufti Zubair Wadood, Technical Officer, Global Polio Eradication Initiative, WHO

Dr Wadood discussed the experiences and lessons learnt from the Global Polio Eradication Initiative in relation to reaching MMPs. He stressed the importance of implementation at the ground level, noting that strategies cannot work unless translated into action at the lowest level. He noted the need to maintain human resources at the operational level and to ensure sensitive surveillance, especially at the community level. Surveillance data are critical for identifying unusual trends, as in the example from Peshawar, Pakistan where an unusual rise in polio cases was related to Afghan refugees. To highlight the challenge of reaching MMPs, he shared a quote from the parent of a nomadic child affected with polio in Ethiopia: “We usually move and follow where the clouds and the rain moves; therefore, unless your health programmes and polio campaigns move also with the clouds and the rain as we do, you will never reach us and our children will not get the polio vaccine”. He emphasized microplanning as an essential operational tool, which involves bottom-up planning and the engagement of all community stakeholders. He highlighted the importance of mapping border areas, not only at international borders but also at the lowest levels between districts and between provinces so that no populations at the boundaries are missed.

**Eliminating malaria: Global overview and case studies outside the GMS**

Dr Kim Lindblade, Malaria Elimination Team Lead, Global Malaria Programme, WHO

Dr Lindblade spoke on the global progress toward elimination as well as the progress in E-2020 countries, 21 countries identified with the potential to achieve elimination by 2020. She presented an overview of the WHO framework for elimination, noting the shift to malaria elimination as a continuum. She described stratification as a critical first step towards elimination and the importance of intensifying and focusing activities as countries move closer to elimination. She detailed the case study of Cabo Verde, where malaria was eliminated twice previously and returned twice (with both instances related to lapses in vector control). In 2015, there were only seven cases, but in 2017, the country experienced an outbreak of 450 cases (437 of which were indigenous). Dr Lindblade described multiple hypotheses that were tested to determine the cause of the outbreak. Further investigation revealed that the quality and coverage of indoor residual spraying (IRS) had declined substantially during the period in which there had been an increase in malaria cases. Without effective vector control, receptivity rebounded and imported cases led to indigenous transmission. Based on mapping data, IRS spray agents were then retrained, supervised and directed to spray in 17 districts. The last indigenous case was reported in January 2018. Dr Lindblade emphasized the importance of examining the local context and using flexible approaches: “elimination does not have a recipe book. We have a framework and best practices, but we need to be creative – we need people in the field who can problem solve”.

MME Programme Partners’ Forum
Project updates

*Seek and find: evolving approaches to serving hard-to-reach groups in four countries*

Dr Kemi Tesfazghi, Malaria Technical Advisor, Population Services International (PSI), Cambodia

Dr Tesfazghi discussed PSI’s approaches to accessing hard-to-reach areas and populations in Cambodia, Lao People’s Democratic Republic, Myanmar and Viet Nam. Their worksite programme targets peoples living and working on worksites who engage in forest-related activities. One of the key lessons learnt from their programme is that a “one size fits all” approach does not suffice across countries or even within countries. She discussed the example of Cambodia, where they found differences across worksites in terms of caseload and proximity to health facilities and licensed private providers. They identified the importance of provide providers, with PSI Cambodia private providers testing 16 times more positive cases in forest-goers than mobile malaria workers (MMWs) in 2017. PSI found that multiple strategies should be employed to increase the testing of at-risk populations: “Evidence-based dynamism is not an option – it’s a programme necessity”. Examples of strategies include improving communication channels and materials in Viet Nam, e.g. a comprehensive package of behaviour change communication (BCC) tools and using non-formal providers to fill gaps between the public and private sector in Myanmar such as grocery stores and mobile drug vendors. Dr Tesfazghi emphasized the importance of routinely collecting reliable data to inform programming, multi-level engagement and the capacity to implement, reflect and iterate.

*Access to hard-to-reach populations*

Dr Ronaldo Estera, Laos Country Director, Health Poverty Action (HPA)

Dr Estera highlighted the importance of volunteers on the ground. He spoke on the work of HPA in Cambodia, Lao People’s Democratic Republic, Viet Nam and at the Myanmar–China border. Using evidence-based interventions, HPA targets forest-goers, indigenous populations, ethnic minorities and MMPs. Along multiple border areas, HPA works on a wide range of interventions and outreach, including malaria stations, cross-border workshops, community mapping, information, education and communication (IEC) and BCC materials and MOTs. He spoke on the successes of HPA’s work as well as lessons learnt and challenges. Successes included decreased parasite incidence at the Myanmar–China border, over 2500 MMPs reached by MOTs in Cambodia, 11.7% case reduction across five communes in Viet Nam between 2016 and 2017, and significant contributions of VMWs and malaria post volunteers to case management in three southern provinces of Lao People’s Democratic Republic. Geographical barriers remain a major challenge – particularly in areas where access is only by foot. Lessons learnt included reaching MMPs where they are, “working with their own” and continuously building local capacities. He concluded with an overview of the covered areas for RAI2E.

*Topic 2: Ensuring the availability of high quality drugs and diagnostics*

*Plan for RAI2E regional pharmaceutical component, 2018–2020*

Ms Uhjin Kim, Technical Officer, Essential Medicines and Health Technologies, WHO Regional Office for the Western Pacific

Ms Kim spoke on the pharmaceutical component activities of the RAI2 regional grant. The goal of these activities is to ensure access to quality assured and appropriate combination antimalarial products and their appropriate use in GMS countries. Specific objectives include strengthening regulatory capacity to ensure availability of quality-assured products in public and private sectors and eliminating substandard, falsified products from the subregional market. Ms Kim explained that during RAI there
was an assumption that many of the challenges related to intentionally falsified products crossing borders. However, falsified products were not the major problem; one third of products were substandard products from legitimate places. These products did not conform to international guidelines. Nevertheless, it is difficult to determine whether the problem is the result of a manufacturing problem or a problem of degradation during the supply chain. Ms Kim outlined the activities planned for 2018–2020, such as strengthening regulatory capacity across hotspot border areas and public awareness of oAMT, substandard and falsified (SF) medical products and drug resistance. She also spoke on the workshop on dossier review of ACT using collaborative procedures, noting that Lao People’s Democratic Republic and Thailand have signed up and that it will be helpful for other countries to participate too.

Eliminating in the dark: the importance of ongoing drug quality monitoring to inform responsive malaria elimination strategies

Ms Lorina McAdam, Director, GMS Elimination of Malaria through Surveillance Programme (GEMS), Population Services International (PSI)

Ms McAdam spoke on how PSI monitors, influences and ensures drug quality. On market monitoring, she described the outlet surveys of ACT watch, which were designed to understand the supply side of antimalarial markets and were conducted in four GMS countries (Cambodia, Lao People’s Democratic Republic, Myanmar and Thailand). Data from Myanmar in 2012 allowed for the detection of alarmingly high rates of oAMT availability in the private sector. oAMTs were available in 70% of private sector outlets, with a single private distributor dominating over 70% of the market share. She described the Artemisinin Monotherapy Replacement Programme (AMTR) as a multi-pronged approach to shaping the market in Myanmar. The AMTR approach involved Myanmar banning the import of monotherapies, PSI introducing an ACT subsidy to national distributors, BCC at community and provider levels and strong support from the Ministry of Health and Sports for allowing non-formal outlets to sell first-line, quality-assured ACTs. There is still a concerning presence of oAMTs in Myanmar. Qualitative survey results demonstrate possible explanations: lack of awareness of the ban and demand from customers (customers want to use oAMTs again because of past experience). There have been no oAMTs found in the other GMS countries from ACT watch data. She concluded with three key takeaways: replacing poor quality drugs with first-line treatment throughout the market is possible and measurable; ensuring that private providers only use first-line treatment is possible, and community awareness would enhance this; and without ongoing monitoring, the resurgence of the availability of undesirable drugs remains a risk.

Topic 3: Strengthening collaboration and partnership coordination

Partnership coordination in Myanmar

Dr Aung Thi, Deputy Director and Programme Manager, NMCP

Dr Thi provided an overview of the NMCP partners, describing the Malaria Technical and Strategy Group (Malaria TSG) as the platform for partnership coordination. The TSG includes a core TSG, an expanded TSG and three working groups. Key areas of work for the TSG include advising implementing partners (IPs) on technical matters related to implementation; providing a forum for discussion and dissemination of information; mapping donor funds; and guiding the programme and implementing partners to avoid overlaps of funds and activities. The mapping of IPs and VHVs by township demonstrates that there is a range of IPs across townships, from no IPs to eight IPs. He discussed the development of ATM eHealth, an electronic reporting system that will cover the country and extend to cover the private sector phase by phase. He also spoke on measures to streamline partner activities such as ensuring that malaria-related research is first approved by NMCP and cleared by the Ethical
WHO’s role to facilitate partnership coordination and collaboration

Dr Hiromasa Okayasu, Coordinator, Mekong Malaria Elimination Programme, WHO

Dr Okayasu presented the MME programme’s key areas of work for facilitating coordination and collaboration among GMS partners. The partners’ forum is one key area and future proposed activities include establishing a partners’ mailing list, establishing a partners’ activity summary (to share regular updates among partners), organizing a quarterly call and organizing an annual face-to-face. Another key area – advocacy and communications – is supported by the development of the MME bulletin, a regular epidemiology summary and the MME website (hosted by WHO Global Malaria Programme website). The third key area of work, cross-country projects, involves subregional collaboration. Dr Okayasu highlighted the examples of the Ministerial Call for Action to Eliminate Malaria in the GMS before 2030 (signed by the GMS ministers of health at the World Health Assembly in May 2018) and the regional data-sharing platform (RDSP).

Day 2 (22 March 2018) – Bangkok, Thailand

Dr Aung Thi and Dr Hiromasa Okayasu were nominated as Co-Chairs. Discussions began with Dr Okayasu providing a recap of the previous day and opening the floor to clarifications.

Asia Pacific Leaders Malaria Alliance’s work to strengthen political leadership and financing for malaria

Dr Benjamin Rolfe, Chief Executive Officer, Asia Pacific Leaders Malaria Alliance

Dr Rolfe described the work of Asia Pacific Leaders Malaria Alliance (APLMA) including the most recent Twelfth East Asia Summit, which reaffirmed the commitment to the goal of an Asia–Pacific free of malaria by 2030. He welcomed ongoing efforts to implement the proposed actions in the Asia Pacific Leaders’ Malaria Elimination Roadmap. He noted a challenge in communicating progress in the GMS: “Progress is not only measured by the marginal changes achieved each year, but by where we would have been if the initiative had not started, and the risk of where we could be if we do not sustain financing”. He spoke on financing in the GMS, describing the large reliance on external funding and the uncertainty of the GF funding in the future. He highlighted the domestic resource mobilisation for malaria in Asia–Pacific, including the increase in domestic financing by 44% between the period 2012–2014 and 2015–2017 and the expected additional 40% increase for 2018–2020. He stressed the importance of making malaria an attractive topic for politicians to become involved with. He encouraged sharing any critical issues or ideas that should be presented to politicians, noting APLMA’s communication capacity. He also noted the importance of thinking creatively to engage support from other individuals, such as mobilizing high net-worth individuals in the GMS. He described other initiatives, including plans to replicate the Product (RED) initiative, with a focus on online companies and the M2030 Defeating Malaria Together.

Updates on RAI grant implementation

Dr Faisal Mansoor, Head of Programme Unit, UNOPS-PR

Dr Mansoor described an overview of coordination and partnership under RAI. He presented the grant management structure of RAI2E. He explained that there can be two types of relationships: legal obligations and functional, operational relationships. United Nations Office for Project Services
UNOPS (UNOPS) is the regional principal recipient (PR), and he described the role of UNOPS in terms of liability. In Cambodia and Lao People’s Democratic Republic, for example, UNOPS is fully liable for financial and programmatic activities, acting directly as PR. In Thailand and Viet Nam, on the other hand, UNOPS is Co-PR. He presented the breakdown of SR/Co-PR/NPs for the five GMS countries and the regional component.

**Topic 4: Improving surveillance in the GMS**

**Country presentations**

**Cambodia**

Dr Chea Huch, Deputy Director, National Centre for Parasitology, Entomology and Malaria Control

Dr Huch explained that malaria case data are reported at the central level through two main systems: the health management information system (HMIS) and the malaria information system (MIS). He described the current surveillance system as complex, with the primary issue that the National Center for Parasitology, Entomology and Malaria Control (CNM), the provincial health departments (PHDs) and operational districts (ODs) cannot respond to cases quickly enough to provide adequate responses. HIS and MIS can be duplicative for health-care workers and reporting from the VMW level is inhibited by the need for monthly meetings to collect paper forms. Dr Huch detailed the background of the malaria surveillance app. CNM has trained staff in 816 HF and 915 VMW for using the app on tablets and smart phones for real-time reporting. He spoke on the challenges of data from private providers and when donors/stakeholders use their own reporting systems not linked with MIS. Ways forward included refresher training for HF staff and VMWs for using the mobile app, updating the app based on user feedback and rolling out the app to another 13 provinces in 2019.

**China**

Dr Yan Jun, Division Chief, National Health and Family Commission

Dr Jun spoke on the functions of their web-based reporting system, which has been in place since 2004. He focused on the 1-3-7 model supported by the national malaria reporting system. Case investigation and classification involves the epidemiological investigation of confirmed cases to be labelled as indigenous, introduced, imported, relapse or induced. Dr Jun noted that if there is doubt, the case is considered as indigenous. For foci with transmission, response includes vector control, targeted mass drug administration and health education. Foci response is vector control and health education for foci with potential transmission and health education for foci without transmission. Dr Jun highlighted the achievements of the 1-3-7 strategy in 2017, including the high rate of case reports within 1 day (100%) and of epidemiological investigation within 3 days (83.55%).

**Lao People’s Democratic Republic**

Dr Odai Sichanthongthip, Technical Officer of Centre for Malariology, Parasitology and Entomology (CMPE)

Dr Sichanthongthip discussed Lao People’s Democratic Republic’s rollout of DHIS2. While the previous surveillance system created a bottleneck, the DHIS2 system gives greater responsibility to districts for data collection, reporting and feedback. Responsibilities for the district anti-malaria nucleus (DAMN) involve data entry from all health centres, villages and PPMs, and weekly check-ins with the province anti-malaria station (PAMS) for ensuring timely reporting. Increasing private sector engagement in the surveillance system was discussed. Strategies for engagement include mapping private sector providers, expanding the PPM network and training providers in case management and reporting. Of the reported cases from the PPM network (via Android app), 54.7% are sent directly to DHIS2 within 24 h. To monitor key performance indicators, Lao People’s Democratic Republic has developed three
standard dashboards (national management; provincial management; and district epidemic alert), which are updated monthly. For the future roadmap of DHIS2, three specific elements were highlighted: increasing the usage of DHIS2 to respond to epidemiological and logistics data in provinces and districts (including routine supervision for PAMS staff on DHIS2 functions); routinely monitoring and troubleshooting problems with data entry and reporting; and mapping malaria burden and risk to support identification of transmission areas to better target resources (e.g. geo-location of all points of care and villages).

**Myanmar**

Dr Aung Thi, Deputy Director and Programme Manager, NMCP

Dr Thi highlighted the difficulties with the paper-based reporting system, including delays of reporting monthly and at times, quarterly data. He noted the reliance on Google Drive for data storage and the plan to change servers. The importance of VHVs was emphasized, with Dr Thi sharing the finding that in nearly all states VHVs test more cases than basic health staff (BHS). He detailed the piloting of case-based DHIS2 platform with support from WHO and for VHVs with support from Save the Children. Case-based surveillance training conducted by WHO and NMCP took place in November 2017. Since then, monthly data validation and supervisory visits have been done to ensure that android tracker capture is up-to-date. Dr Thi listed a number of issues on the transition from a paper-based reporting system to an electronic-based system in relation to poor connectivity (especially in hard-to-reach and non-state actor [NSA] areas), staff skills and limited private sector engagement. Other challenges are vacant positions, i.e. some townships being without an officer and delayed submission of data by IPs at local and national levels. Establishing the 1-3-7 strategy from the model of China is one of the planned activities. This includes establishing the mandatory notification of malaria cases. The scale up of DHIS2 case-based surveillance is also planned.

**Thailand**

Dr Prayuth Sudathip, Malaria Programme Manager, Bureau of Vector Borne Diseases, Department of Disease Control

Thailand’s surveillance system (Malaria Online) involves real-time surveillance and effective response with mobile technology and automated analysis functions. Thailand uses the 1-3-7 strategy (notification on Day 1, investigation by Day 3, and response by Day 7). Dr Sudathip noted that it is almost real-time, as some areas have the mobile technology while other areas do not. They conduct passive and active case detection and real-time case and foci mapping. Foci classification is at the sub-village level (with four classifications – active foci, residual non-active foci, clear foci but receptive and cleared foci but not receptive). Dr Sudathip noted that the surveillance database captures not only case data but also entomological data, vector control and foci investigations. He also explained that the database includes data from the private sector, CSOs and refugee camps. One of the challenges is on-time and complete case investigation. To meet this challenge, Thailand plans to enforce malaria as a notifiable disease (under the Infectious Disease Act, 2015) and to use mobile technology for real-time reporting and foci management. Under RAI2E, they will use tablets for communities to use online reporting systems. Other challenges are phasing out the vertical programme, integrating malaria activities into the general health system and completing investigation and response, especially for MMPs and cross-border cases. They plan to innovate with a countrywide online notification and response system to address imported cases. He noted the importance of cross-country discussions, citing the difficulties when Thailand reports an imported case from Cambodia and Cambodia reports an imported case from Thailand.
**Viet Nam**

Dr Nguyen Quy Anh, Deputy Director, National Institute for Malariology, Parasitology and Entomology

Dr Anh spoke on surveillance as a prioritized component of Viet Nam’s malaria elimination. The surveillance strategy has been developed on the timeline of 2-4-7. Confirmed cases are reported within 2 days, cases are investigated and classified within 4 days, and foci are investigated and classified within 7 days. Viet Nam has received support from the Clinton Health Access Initiative (CHAI) to develop a case-based system. For their web-based reporting system, the commune level generates a case-based report and a monthly report (aggregated case data), which are sent to MIS. Supportive supervision is given at the commune level every month and at the district level at least four times per year. Dr Anh described a number of challenges, including poor compliance of private sector reporting; infrequency of malaria data from other ministries, e.g. military and agriculture; strengthening real-time case reporting from village and commune levels; initiating and expanding routine active case investigation to classify cases; and integrating case data with other data like entomology and climate/environment to improve foci investigation.

**Country discussions**

The countries discussed issues related to standardizing the format of data from partners as well as from the military. Case-based surveillance was also discussed in-depth. Cambodia, Lao People’s Democratic Republic and Myanmar provided updates on the implementation of their case-based surveillance, including where the surveillance is being implemented and at what level.

**Updates on data-sharing in the GMS**

*Malaria elimination database (MEDB) for the GMS under RAI2E*

Dr Abdisalan Noor, Team Leader, Surveillance, Monitoring and Evaluation, Global Malaria Programme, WHO

Dr Noor discussed the three main objectives of the malaria elimination database for the GMS: monitoring progress on elimination within and across GMS countries; strengthening the overall capacity of national programmes to generate, store, analyse and use information for elimination and to enhance readiness for compiling national dossiers for certification; and supporting countries to address cross-border challenges to elimination through a regional data sharing and analysis platform. Dr Noor provided an overview of the improved data and analytical dashboards for the Subregion. Subnational data (monthly or weekly) are analysed with advanced dashboards. He noted that the surveillance bulletins (monthly and bi-annual) are shared with NMCPs and partners. Other supporting activities that were described were: developing national data repositories (using DHIS2 or other similar platforms), facilitating the implementation of case-based surveillance in elimination areas and conducting annual surveillance assessments. He emphasized training as a critical activity, including both regional-level training and direct training. Annual NMCP surveillance workshops will enable dissemination and discussion of normative guidance and other issues such as bottlenecks. All NMCPs will be provided access to the malaria elimination database to ensure that they are able to view cross-border data and dashboards and to help facilitate cross-border response. Dr Noor explained that an NMCP and WHO online communication forum will be established to discuss any cross-border issues arising from data analysis, and to recommend action.

**Progress and challenges of the GMS Regional Data Sharing Platform**

Dr Hiromasa Okayasu, Coordinator, MME Programme, WHO

Dr Okayasu spoke on the regional data-sharing platform (RDSP) that collects and stores malaria surveillance data to facilitate data sharing and analysis by GMS countries. Global Fund RAI invested 1
million US dollars in 2014–2017 to establish the platform. The GMS countries have been reporting their data to the platform, but the level of data and timeliness of reporting varies. Dr Okayasu described the current status of the RDSP with regard to the platform used, the data level, reporting timeliness and data from the private sector for each GMS country. He noted the usefulness of the health centre level data shared by Lao People’s Democratic Republic and Cambodia, which enables very detailed analyses for understanding where transmission occurs. He also described the current use of surveillance data with respect to reviews by WHO and NMCP, reviews by partners and additional WHO support. One challenge is that partners are not reporting on time in some GMS countries. He noted the importance of working with countries and partners to improve reporting to national surveillance databases and RDSP, especially with regard to timeliness of reporting; detailed data, e.g. health centre level; improved coverage in remote areas; private sector data and data validation, e.g. consistency across data and up-to-date data. He also emphasized the importance of improving the use of data, particularly in relation to taking action, e.g. outbreak responses as needed. He commented that epidemiological data should at a minimum be reviewed regularly by NMCP and with partners and WHO.

Partners’ work to support surveillance in GMS countries

Response-driven surveillance innovations and iterations

Ms Lorina McAdam, Director, GMS Elimination of Malaria through Surveillance Programme (GEMS), Population Services International (PSI)

Ms McAdam noted that 30–70% of the population in the GMS are estimated to seek and receive treatment from the private sector. She shared progress in generating quality surveillance data from the private sector in PSI’s Cambodia and Myanmar programmes. Although the Lao People’s Democratic Republic and Viet Nam programmes only began testing and reporting last year, their rates are also growing. She spoke on PSI’s investment in DHIS2 as well as the use of the Malaria Case Surveillance app. She described challenges associated with mobile reporting. While the paper-based reporting has been relatively consistent, the mobile reporting rate has declined over time. A major problem is lost or stolen phones. Other issues are software crashes or issues with the app and decreased motivation due to double reporting burden. Integration of private sector data is also challenging due to inefficient data flows. Lao People’s Democratic Republic has achieved recent progress: electronic integration of DHIS2 with the MoH health management information system (HMIS) enables rapid positive case detection and submission to the HMIS within 24 h to trigger government-led investigation and response. She also emphasized the ongoing challenge of how to use the data collected, sharing an example of successful data use from the PSI field office in Mandalay. She concluded with three takeaways: effective surveillance will depend more on people than technology; technology must be fit for purpose, user-centred, adaptable and scalable; and there is a need to continue innovating and learning from each other to achieve elimination together.

Supporting malaria surveillance in the GMS

Dr Jeffrey Hii, Regional Vector Control Specialist, Malaria Consortium

Dr Hii spoke on the cross-border surveillance initiatives along the Lao–Cambodian border. Adult males, forest workers and construction workers were significantly more at risk for malaria infection. He noted that vector control must be adapted to fit the context, highlighting the importance of providing long-lasting insecticidal nets (LLINs) or treated nets that people will actually use. He shared the results of the Thailand MMP Survey (2017–2018), which demonstrated a very low proportion of forest-goers using ITNs in the forest across Thai border regions. He discussed the drivers of residual malaria transmission. In Thailand, a high proportion of biting occurs outside of sleeping times. Determining where the human exposure occurs is critical to understanding the persistence of transmission even after good vector control coverage.
High-risk populations surveillance and response

Ms Valerie Scott, Programme Manager, Lao People’s Democratic Republic RAI2E Partnership, Malaria Elimination Initiative, University of California, San Francisco (UCSF)

Ms Scott presented on the work of the UCSF Global Health Group’s Malaria Elimination Initiative (MEI). MEI has developed a toolkit for targeted surveillance and response approaches, with the four modules of formative assessment; case-control using malaria elimination risk factor analysis tool (MERFAT); venue-based and peer referral sampling approaches; and adaptive reactive case detection. Ms Scott presented the results from pilot studies in Lao People’s Democratic Republic using the toolkit. They found that the government ban on timber led to a sharp decline in malaria, but that villagers still travel to the forest for food and other forest products. From their northern Lao People’s Democratic Republic survey, they found that adult males were not the only high-risk group, and that cases were distributed across both sexes and all age groups. Not having a net in the household increased the odds of a malaria infection 11-fold (regardless of whether the net was treated or not). Cases were also concentrated in households, with greater likelihood of infection if another household member was infected. Ms Scott also presented results from other case studies in Nepal, Indonesia and Namibia. She concluded with the important lessons learnt: risk categories are often too general and formative assessment and case-control studies should be used where possible; continual iteration is needed to refine understanding of high-risk populations (HRPs) with more flexible responses based on up-to-date knowledge, and approaches to identify and reach HRPs need to be integrated into routine programme activities.

Surveillance guidance and tools

Dr Abdisalan Noor, Team Leader, Surveillance, Monitoring and Evaluation, Global Malaria Programme, WHO

Dr Noor presented an overview of the *Malaria Surveillance, Monitoring and Evaluation – A Reference Manual*, noting that feedback from GMS countries would be useful. He outlined chapters from the book, highlighting an example diagram on reactive surveillance and response activities. He emphasized that reactive case detection should not be used as a substitute and that passive case detection should be the bedrock. He highlighted the importance of maximizing passive case detection as the few remaining cases are identified. Acknowledging that the reference manual is comprehensive, he commented that separate documents could be developed within countries based on this manual to focus on specific topics. Dr Noor also described the Health Data Collaborative for data on health and sustainable development. He discussed the DHIS2 health apps based on WHO standards for indicators, metadata, data quality metrics and analysis. The health apps include cross-cutting platforms (e.g. health systems, clinical services), and in-depth modules for disease/programme-specific analyses. He presented an overview of the DHIS2 aggregate and case-based surveillance data. He also shared examples of the curriculum developed for the analysis and use of health facility data. Digital solutions for malaria elimination were described in detail in relation to the technical approach, the operational approach and the proposed timelines. CHAI will lead the project management for the digital solutions, overseeing the deliverables and timelines. The technical approach encompasses extending the core capabilities of DHIS2, common goods and enhancements to mobile tools (including for case notification and investigation, foci investigation and response support). The objective of the digital solutions is to strengthen and roll out integrated surveillance information systems with upgraded core DHIS2 functionality and effective mobile tools in a sustainable policy and technical environment across malaria elimination geographies.
Translating epidemiological analysis into action: update from MORU

Professor Richard Maude, Head of Epidemiology, Mahidol Oxford Tropical Medicine Research Unit (MORU)

Dr Maude gave an overview of MORU’s malaria epidemiological research in the GMS and Bangladesh. Technical support for national malaria and dengue control programmes is provided through epidemiological analyses and mapping malaria and dengue incidence and risk; determining effects of population movement on disease distribution; and training and capacity development (e.g. regional workshop for the GMS and Bangladesh on spatial data management and GIS mapping). He described analyses related to “hot spots”, climate and forest distribution, and he emphasized that the goal is for MORU to support countries in performing such analyses. A major research focus has been measuring population movements. Travel surveys and anonymised mobile phone data have been used to map travel patterns. Dr Maude also spoke on the mapping of genetic markers for artemisinin resistance and the METCAP model used to predict that the estimated cost to eliminate malaria in the GMS is 2.4 (2.07–3.28) billion US dollars with a return on investment of 500%. Dr Maude described MORU’s future plans: ongoing delivery of policy-relevant pre-publication research results to NMCPs; continuing to provide support and training for NMCPs on epidemiological analysis and modelling; and collaborating with DHIS2 development teams to expand platform capabilities.

Discussion: Improving surveillance for malaria elimination in the GMS

Dr Abdisalan Noor, Team Leader, Surveillance, Monitoring and Evaluation, Global Malaria Programme, WHO

Dr Noor led the final discussion of the day, focusing on three main topics: country support in relation to surveillance system strengthening and use of data; the use of the regional database and any issues or challenges related to its use; and the role of partners, including expectations around these roles. Initial discussions centred on surveillance system integration and how malaria elimination will work best within that system. Strengthening country capacity and supporting DHIS2 implementation were other issues raised. The advantages of the regional database were discussed as well as the potential ways to integrate some of the data for the World Malaria Report.

Recommendations

Recommendations for GMS Member States

Member States should:

- consider the further use of the regional data-sharing platform to facilitate cross-border collaboration;
- monitor the malaria epidemiology regularly to be able to detect and respond to outbreaks in a timely manner;
- note and explore the possibility to reallocate RAI2E funds in mid-2019 when UNOPS and the Global Fund will assess the savings of RAI2E and provide unspent funding to the well-performing projects;
- continue to work on strengthening the capacity of national regulatory authorities to ensure timely availability of drugs.

---

2 For the People’s Republic of China this would include the areas of Yunnan Province and Guangxi Zhuang Autonomous Region.
Recommendations for WHO

- WHO and partners should work with Member States to improve surveillance and response capacity to finish the last mile of malaria elimination.
- WHO and Member States should consider the streamlining of reporting to the World Malaria Report, especially for surveillance data already available in the WHO regional data-sharing platform.
- WHO, partners and research institutions should consider organizing a forum for disseminating and discussing GMS research findings.

Conclusion

Dr Hiromasa Okayasu, Coordinator, Mekong Malaria Elimination Programme, WHO summarized the discussions for the four topics of the forum. Recommendations were developed with comments and feedback from country representatives and partners.

Dr Eva Maria Christophel, Regional Advisor Malaria, WHO Regional Office for South-East Asia gave the closing remarks of the forum, thanking the Ministry of Public Health in Thailand for hosting the forum. She also thanked the WHO Secretariat and the MME programme team. She noted the diversity of presentations from partners, which allowed greater sharing of information and discussions on important challenges in the Subregion. While acknowledging the achievements in the GMS, she emphasized the uncertainty of funding in the future. She noted the heavy dependence on partners for supplies. She said, “use this chance of the next three years to accelerate and knock the disease burden down. Build the capacity now so that programmes can carry on by themselves in the future”. She encouraged partners to help drive these capacity-building efforts, so that the efforts are more streamlined and the national programmes can increase their independence.

She also encouraged GMS countries to quickly move toward case-based surveillance. There is greater need to exchange data on foci rather than aggregated data, and more data on cases will make the RDSP even more meaningful. She also highlighted the lack of data on behaviour. As the number of cases decreases, behavioural information is critical. Researchers have an important role of generating information to bring to country programmes and help find solutions for reaching the hard-to-reach corners where foci exist. She concluded by emphasizing the importance of community empowerment. Communities must be empowered to actively request what they should have, rather than to be passive recipients of services.
Appendices

Appendix 1 – Partners’ forum agenda

Objectives of the meeting

To strengthen partnership coordination in malaria elimination in the Greater Mekong Subregion (GMS):

- Exchange information (including activities and results) and best practices across partners
- Discuss the major challenges/gaps in malaria elimination
- Discuss ways to strengthen collaboration and coordination of activities at regional and country levels to best meet subregional and country needs, especially surveillance.

Programme schedule

<table>
<thead>
<tr>
<th>Date &amp; time</th>
<th>Agenda</th>
<th>Speaker/s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wednesday, 21 March 2018</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opening ceremony</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08:30–09:00</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>09:00–09:05</td>
<td>Welcome</td>
<td>H Okayasu (WHO)</td>
</tr>
<tr>
<td>09:05–09:30</td>
<td>Welcome address by Representative from Ministry of Public Health, Thailand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remarks by World Health Organization (WHO) Representative, Thailand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remarks by Advisor, Malaria, Department of Communicable Diseases, WHO Regional Office for South-East Asia on behalf of the Regional Director</td>
<td></td>
</tr>
<tr>
<td>09:30–09:45</td>
<td>Introduction of participants, nomination of the Chairs, logistics announcement</td>
<td></td>
</tr>
<tr>
<td><strong>Background and updates</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:15–10:30</td>
<td>Objective of the forum/overview of Mekong Malaria Elimination Programme</td>
<td>H Okayasu (WHO)</td>
</tr>
<tr>
<td>10:30–10:45</td>
<td>Status of drug resistance in GMS countries</td>
<td>P Ringwald (WHO)</td>
</tr>
<tr>
<td>11:45–12:15</td>
<td>Progress with malaria elimination and remaining challenges (including expected role of partners) (15 mins each)</td>
<td>Cambodia (NMCP) China (NMCP) Lao People’s Democratic Republic (NMCP) Myanmar (NMCP) Thailand (NMCP) Viet Nam (NMCP)</td>
</tr>
<tr>
<td>12:15–12:30</td>
<td>Discussion</td>
<td></td>
</tr>
<tr>
<td>13:30–14:00</td>
<td>Update on the Global Fund Regional Artemisinin Initiative (RAI) and Regional Steering Committee Meeting</td>
<td>A Joubert (RSC/WHO)</td>
</tr>
</tbody>
</table>
### Topic 1: Improving access to hard to reach populations

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00–14:45</td>
<td>Improving access to the hard-to-reach populations (15 mins each)</td>
<td>Cambodia (NMCP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Myanmar (NMCP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Viet Nam (NMCP)</td>
</tr>
<tr>
<td>14:45–15:00</td>
<td>Supporting the last-mile operation: polio case study</td>
<td>Z. Wadood (WHO/POL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>by Skype</td>
</tr>
<tr>
<td>15:00–15:15</td>
<td>Eliminating malaria: global overview and case studies outside GMS</td>
<td>K Lindblade (WHO)</td>
</tr>
<tr>
<td>15:15–15:45</td>
<td>Access to the hard-to-reach areas/populations: Project updates: achievements and challenges (15 mins each)</td>
<td>L McAdam (PSI)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R Estera (HPA)</td>
</tr>
<tr>
<td>15:45–16:00</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>

### Topic 2: Ensuring the availability of high quality drugs and diagnostics

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:15–16:30</td>
<td>Global Fund RAI 2 Pharma activities</td>
<td>U Kim By Skype</td>
</tr>
<tr>
<td>16:30–16:45</td>
<td>PSI's project to ensure malaria drug quality</td>
<td>K Tesfazghi (PSI)</td>
</tr>
</tbody>
</table>

### Topic 3: Strengthening collaboration and partnership coordination

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:45–17:00</td>
<td>Example of partnership coordination at country level</td>
<td>Myanmar (NMCP)</td>
</tr>
<tr>
<td>17:00–17:15</td>
<td>WHO’s role in facilitating communication and collaboration among partners</td>
<td>H Okayasu (WHO)</td>
</tr>
<tr>
<td>17:15–17:30</td>
<td>APLMA's work to strengthen political leadership and financing for malaria</td>
<td>B Rolfe (APLMA)</td>
</tr>
<tr>
<td>17:30–17:45</td>
<td>RAI2E implementation update and coordination under the RAI2E Grant</td>
<td>F Mansoor (UNOPS)</td>
</tr>
<tr>
<td>17:45–18:00</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>

### Date & time | Agenda                                           | Speaker                          |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday 22 March 2018</td>
<td>Recap of Day 1 and objective of Day 2</td>
<td>H Okayasu (WHO)</td>
</tr>
</tbody>
</table>

### Topic 4: Improving surveillance in the GMS

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:15–10:45</td>
<td>Current status and challenges in surveillance in GMS countries (15 mins each)</td>
<td>Cambodia (NMCP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>China (NMCP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lao People’s Democratic Republic (NMCP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Myanmar (NMCP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thailand (NMCP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Viet Nam (NMCP)</td>
</tr>
<tr>
<td>11:15–11:30</td>
<td>New WHO malaria surveillance guidelines</td>
<td>A Noor (WHO)</td>
</tr>
<tr>
<td>11:30–11:45</td>
<td>Progress and challenges of the GMS Regional Data Sharing Platform</td>
<td>H Okayasu (WHO)</td>
</tr>
<tr>
<td>11:45–12:30</td>
<td>Partner’s work to support surveillance in GMS countries (15 mins each)</td>
<td>L McAdam (PSI)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J Hii (MC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A Bennet (UCSF)</td>
</tr>
<tr>
<td>12:30–13:00</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>
| 14:00–14:30| Improving the use of surveillance data:  
  – Dashboards for national and sub-national levels (including the use of DHIS2)  
  – Best practices to translate surveillance information into action | A Noor (WHO)                     |
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:30–15:00</td>
<td>Translating epidemiological analysis into action: update from MORU</td>
<td>R Maude (MORU)</td>
</tr>
<tr>
<td>15:00–15:30</td>
<td>Discussion: How to work together to improve surveillance for malaria elimination in the GMS</td>
<td>A Noor (WHO)</td>
</tr>
<tr>
<td>15:30–16:00</td>
<td>Coffee/tea break</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion and closing session**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:00–16:30</td>
<td>Feedback from partners</td>
<td></td>
</tr>
<tr>
<td>16:30–16:45</td>
<td>Recommendations and conclusion</td>
<td>H Okayasu (WHO)</td>
</tr>
<tr>
<td>16:45</td>
<td>Closing remarks</td>
<td>E Christophel (WHO)</td>
</tr>
</tbody>
</table>
Appendix 2 – List of participants

1. Government participants

Bangladesh
Dr M M Aktaruzzaman
Deputy Program Manager, Malaria & Acedes Transmitted Disease Control & Program Manager
Ministry of Health and Family Welfare
Tuku Tower, Siddique Bazar, Dhaka

Mr Anjan Kumar Saha
MIS/IT Expert, NMEP, CDC, DGHS
Ministry of Health and Family Welfare
Tuku Tower, Siddique Bazar, Dhaka

Cambodia
Dr Chea Nguon
Deputy Director
National Center for Parasitology Entomology & Malaria Control
N° 372, Preah Monivong, corner Street 322, Phnom Penh

Dr Chea Huch
Deputy Director, CNM
National Center for Parasitology Entomology & Malaria Control
N° 372, Preah Monivong, corner Street 322, Phnom Penh

China
Dr Yan Jun
Division Chief
National Health and Family Commission
No.1 Xizhimenwai Nanlu, Xicheng District, 100044
Beijing

Lao PDR
Mr Sisavath Southoniraxay
Deputy Director
Department of Communicable Disease Control
Ministry of Health
Vientiane

Mr Odai Sichanthongthip
Technical Officer
Centre for Malaria, Parasitology and Entomology
Ministry of Health
Vientiane

Myanmar
Dr Thandar Lwin
Deputy Director General (Disease Control)
Department of Public Health
Office #4, Nay Pyi Taw

Dr Aung Thi
Programme Manager (Malaria)
Department of Public Health
Office #4, Nay Pyi Taw

Dr Nay Yi Yi Linn
Assistant Director (Malaria)
Department of Public Health
Office #4, Nay Pyi Taw

Thailand
Dr Anupong Sujiaryakul
Senior Expert in Prevention Medicine
Department of Disease Control
Ministry of Public Health
Nonthaburi

Dr Preecha Prempree
Director
Bureau of Vector Borne Diseases
Department of Disease Control
Ministry of Public Health
Nonthaburi

Dr Prayuth Sudathip
Malaria Program Manager
Bureau of Vector Borne Diseases
Department of Disease Control
Ministry of Public Health
Nonthaburi

Viet Nam
Dr Tran Quang Phuc
Head of Planning Department
National Institute of Malarialogy, Parasitology and Entomology
Ministry of Health
Hanoi

Dr Nguyen Quy Anh
Deputy Chief
Epidemiology Department
National Institute of Malarialogy, parasitology and Entomology
245 Luong The Vinh street, Nam Tu Liem district,
Hanoi

Dr Nguyen Van Chuong
Director of Institute of Malarialogy, Parasitology and Entomology
611B Nguyen Thai Hoc Street Quy Nhon city, Binh Dinh

2. International partners
American Refugee Committee (ARC)
Dr Thet Myo Tun
Senior Programme Coordinator
37 Soi Som Prasong 3, Petchburi 15 Road, Thanon Phaya Thai, Khet Ratchathewi, Bangkok

APCASO
Quentin Batreau
Programme Officer
66/5, 33 Tower, Sukhumvit 33 Road, Klongton Nuea, Wattana Bangkok
1010, Thailand

Asian Collaborative Training Network
Dr Cecil Hugo
Executive Coordinator
12/F Times Plaza Building
United Nations Avenue. Cor Taft Avenue
Malate, Manila

Asia-Pacific Leaders Malaria Alliance
Dr Benjamin Rolfe
CEO
1/02 Helios
11 Biopolis Way
Singapore

Asian Development Bank (ADB)
Dr Sonalini Khetrapal
Subregion Health Security Project
Mandaluyong, Manila

Asia Pacific Malaria Elimination Network (APMEN)
Dr Effie Espino
Director
11 Biopolis Way
Singapore

Bill & Melinda Gates Foundation
Dr Jonathan Cox
Senior Programme Officer, Malaria Global Health Programme
440 5th Ave N., Seattle, WA 98109
Washington

CDC/Center For Global Health, Malaria Branch
BK Kapella
CDC
Diseases And Malaria, Atlanta
Dr Jimee Hwang
Medical Epidemiologist
CDR, US Public Health Service
Centers for Disease Control & Prevention
University of California, San Francisco

Clinton Health Access Initiative (CHAI)
Dr Inessa Ba
Malaria Regional Manager, Southeast Asia
Clinton Health Access Initiative
Phnom Penh

CSO Platform
Mr Shreehari Acharya
CSO Platform coordinator
Bangkok

Health Poverty Action (HPA)
Dr Ronaldo Estera
Director Laos
P.O. Box 5628, No. 381, Unit 16,
Ban Phonthan-Neua,
Saysettha District
Vientiane
Dr Lin Xianxian
P.O. Box 5628, No. 381, Unit 16,
Ban Phonthan-Neua,
3rd Floor, Camellia Hotel Complex
96th. East Dongfeng Road
Kunming, Yunnan

Japan International Cooperation Agency (JICA)
Dr Masatoshi Nakamura
Consultant on Malaria Control
Sakura Tower, 339 Bo Gyoke Rd, Kyauktada Township,
Yangon

International Organization for Migration (IOM), Asia Pacific
Dr Patrick Duigan
Regional Migration Health Adviser
IOM Regional Office for Asia and the Pacific
Rajanakam Building, 18th Floor
183 South Sathorn Road
Bangkok

Dr Montira Inkochasan
Regional Migration Health Support Officer
IOM Regional Office for Asia and the Pacific
Rajanakam Building, 18th Floor
183 South Sathorn Road
Bangkok

Ms Amaralak Khamhong
Project Coordinator
Migrant Health Unit
<table>
<thead>
<tr>
<th>Organization</th>
<th>Contact Person</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institute Pasteur</td>
<td>Dr Patrice Piola</td>
<td>Head of Epidemiology Unit, 5 Preah Monivong Blvd (93), Phnom Penh</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Moritoshi Iwagami</td>
<td>Laboratory Manager, Ban Kao-Gnot, Sisattanak district, Vientiane</td>
</tr>
<tr>
<td>The Three Millennium Development Goal Fund (3MDG)</td>
<td>Dr Oren Ginzburg</td>
<td>3MDG Director, 12(O), Pyi Thu Lane, 7 Mile, Mayangone Township, Yangon</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Services International (PSI)</td>
<td>Ms Lorina McAdam</td>
<td>GMS Director, No.16, Shwe Gon Taing Street 4, Yangon</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Kemi Tesfazghi</td>
<td>Malaria Technical Advisor, No 29, Street 334, Boeung Keng Kang I, Chamkamon Phnom Penh</td>
</tr>
<tr>
<td>The Global Fund to Fight Aids, Tuberculosis and Malaria (GFATM)</td>
<td>Dr Scott Filler</td>
<td>Senior Disease Coordinator, Malaria, Chemin du Pommier 40, 1218 Grand-Saconnex Geneva</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Ryuichi Komatsu</td>
<td>Senior Advisor, Technical Evaluation Reference Group (TERG), Chemin du Pommier 40, 1218 Grand-Saconnex Geneva</td>
</tr>
<tr>
<td>The Global Fund Regional Steering Committee for the Regional Artemisinin Resistance Initiative</td>
<td>Prof Arjen M. Dondorp</td>
<td>Deputy Director, Mahidol Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, 420/6 Rajvithi Road, Tungphyathai, Bangkok</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ms Amelie Gina Joubert</td>
<td></td>
</tr>
</tbody>
</table>
Executive Secretary
RAI-Regional Steering Committee Secretariat
WHO Country Office in Cambodia
Phnom Penh

Dr Louis Da Gama
Director
Princess of Africa Foundation South Africa

Mahidol Oxford Tropical Medicine Research Unit (MORU)
Prof Nick White
Chair
Faculty of Tropical Medicine, Mahidol University,
420/6 Rajvithi Road, Tungphyathai,
Bangkok

Prof Richard J. Maude
Head of Epidemiology Department
Faculty of Tropical Medicine, Mahidol University,
420/6 Rajvithi Road, Tungphyathai,
Bangkok

Malaria Consortium (MC)
Dr Jeffrey Hii
Senior Vector Control Specialist
Malaria Consortium Asia
Faculty of Tropical Medicine, Mahidol University
420/6 Rajavidhi Road,
Bangkok

Ms Tiff Dahmash
Technical Specialist
Malaria Consortium Asia
Faculty of Tropical Medicine, Mahidol University
420/6 Rajavidhi Road,
Bangkok

Malaria No More (MNM)
Dr Chika Saito
Senior Programme Officer (Advocacy)
8F, 3-7-4 Kojimachi, Chiyoda-ku, Tokyo
102-0083 Japan

Raks Thai Foundation
Mr Promboon Panitchpakdi
Executive Director
185 Pradipat Rd , Soi Pradipat 6
Samsennai, Phayathai
Bangkok

Mr Alistair Shaw
Senior Programme Officer
185 Pradipat Rd , Soi Pradipat 6
Samsennai, Phayathai

MME Programme Partners’ Forum
United Nations
Office For Project Services (UNOPS)

Dr Faisal Mansoor
Head of Programme,
Pyithu Lane, Township, Yangon

Dr Eisa Hamid
Senior Regional Programme,
M&E and Health Systems Specialist, UNOPS-PR
Pyithu Lane, Township, Yangon

United States
Agency For International Development (USAID)/President’s Malaria Initiative

Dr Susann Youll
Supervisory Health Science Specialist
1300 Pennsylvania Avenue, NW
Washington DC

Dr David Sintasath
Regional Malaria Advisor
President’s Malaria Initiative, Greater Mekong Subregion
USAID / Regional Development Mission for Asia
Athenee Tower, 25th Floor, 63 Wireless Road, Bangkok

Ms Niparueradee Pinyajeerapat
Project Management Specialist (Public Health)
President’s Malaria Initiative, Greater Mekong Subregion
USAID/Regional Development Mission for Asia
Athenee Tower, 25th Floor, 63 Wireless Road, Bangkok

Dr Gunawardena Dissanayake
Resident Malaria Advisor – U.S. President Malaria Initiative
Office of Public Health and Education
US Agency for International Development
American Embassy, #1, St. 96
Sangkat Wat Phnom, Phnom Penh

Dr Rida Slot
Project Management Specialist
Resident Malaria Advisor-U.S. President Malaria Initiative
Office of Public Health and Education
US Agency for International Development
American Embassy, #1, St. 96
Sangkat Wat Phnom, Phnom Penh

UCSF Global Health Group’s Malaria Elimination Initiative (MEI)

Dr Valerie Scott
Programme manager,
Vientiane
Chris Cotter
Surveillance Research Coordinator
Malaria Elimination Initiative
Global Health Group
550 16th Street, 3rd floor, San Francisco, CA 94158

US Army Medical Component of the Armed Forces
Research Institute of the Medical Sciences (USAMC-AFRIMS)

Dr Mark Fukuda
Deputy Department Chief, Department of Immunology and Medicine
315/6 Rajvithi Road, Bangkok

Dr Michele D. Spring
Senior Clinical Study Physician, Department of Immunology and Medicine
315/6 Rajvithi Road, Bangkok

Dr Mariusz Wojnarski
Chief, Clinical Trials, IMM Department
315/6 Rajvithi Road, Bangkok

French Embassy, Thailand

Mr Eric Fleutelot
Regional Counsellor in Global Health
35 Charoen Krung Road, Soi 36
Bangrak, Bangkok

Mekong Basin Disease Surveillance (MBDS)

Dr Moe Ko Oo
MBDS Coordinator
Rajprachasamasai Building (No.8), G floor, Department of Disease Control
c/o Ministry of Public Health
Tiwanond Road, Nonthaburi

World Bank

Dr Patrick Osewe
Lead Health Specialist for the Southern Africa
1818 H Street, NW Washington DC

Save the Children

Dr Antonia Powell
Programme Director, GFATM PR Unit, Myanmar
Save the Children
3rd Floor, Wizaya Plaza, No. 226, U Wisaya Road
Bahan Township, Yangon

Dr Min Min Thein
Head of Malaria for Save the Children Myanmar
Save the Children
3rd Floor, Wizaya Plaza, No. 226, U Wisaya Road
Bahan Township, Yangon

University Research Co. Ltd (URC)

Dr Darin Kongkasuriyachai
Deputy Chief-of-Party/Laboratory Advisor
PMI/USAID Control and Prevention of Malaria Project
3. Secretariat

<table>
<thead>
<tr>
<th>WHO Headquarters</th>
<th>Global Malaria Programme</th>
<th>World Health Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Pascal Ringwald</td>
<td>Coordinator, Drug Resistance and containment</td>
<td>20 Avenue Appia, Geneva</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Noor Abdisalan</th>
<th>Global Malaria Programme</th>
<th>World Health Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Leader Surveillance</td>
<td>20 Avenue Appia, Geneva</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Kimberly Ann Lindblade</th>
<th>Global Malaria Programme</th>
<th>World Health Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Leader Elimination Unit</td>
<td>20 Avenue Appia, Geneva</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ms Charlotte Rasmussen</th>
<th>Global Malaria Programme</th>
<th>World Health Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Officer</td>
<td>20 Avenue Appia, Geneva</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHO Regional Office for South-East Asia</th>
<th>Dr Eva Maria Christophel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Advisor, Malaria</td>
<td>WHO Regional Office for South-East Asia</td>
</tr>
<tr>
<td>Department of Communicable Diseases</td>
<td>I.P. Estate, Mahatama Gandhi Marg,</td>
</tr>
<tr>
<td>WHO</td>
<td>New Delhi 110002</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHO Country Office for Myanmar</th>
<th>Dr Badri Thapa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientist, Malaria</td>
<td>WHO, Republic of the Union of Myanmar</td>
</tr>
<tr>
<td>No. 2, Pyay Road (7th Mile Point), Mayangone Township</td>
<td>Yangon</td>
</tr>
</tbody>
</table>
Ms Mya Myintzu
Data Assistant
WHO, Republic of the Union of Myanmar
No. 2, Pyay Road (7th Mile Point), Mayangone Township
Yangon

WHO Country Office for Thailand
Dr Deyer Gopinath
Medical Officer (Malaria and Border Health)
4th Fl., Permanent Secretary Bld 3
Ministry of Public Health
Nonthaburi

Dr Maria Dorina Bustos
Malaria Technical Officer
4th Floor, Permanent Secretary Bld 3
Ministry of Public Health
Nonthaburi

WHO Regional Office for the Western Pacific
Mr James Kelly
Technical Officer
Malaria, Other Vectorborne and Parasitic Diseases
Regional Office for the Western Pacific
P.O. Box 2932
Manila

WHO Country Office for Cambodia
Dr Luciano Tuseo
Scientist
No. 61-64, Preah Norodom Blvd. (Corner St. 306)
Sangkat Boeung Keng Kang I, Khan Chamkamorn
Phnom Penh

Dr Hiromasa Okayasu
Coordinator, Mekong Malaria Elimination (MME)
No. 61-64, Preah Norodom Blvd. (corner St. 306)
Sangkat Boeung Keng Kang I, Khan Chamkamorn
Phnom Penh

Dr Katherine Fitzpatrick
Consultant, Communication, Mekong Malaria Elimination (MME)
No. 61-64, Preah Norodom Blvd. (corner St. 306)
Sangkat Boeung Keng Kang I, Khan Chamkamorn
Phnom Penh

Mr Rady Try
Consultant, Data Manager, Mekong Malaria Elimination (MME)
No. 61-64, Preah Norodom Blvd. (corner St. 306)
Ms Sreyleak Kheng
SSA Assistant, Mekong Malaria Elimination (MME)
No. 61-64, Preah Norodom Blvd. (corner St. 306)
Sangkat Boeung Keng Kang I, Khan Chamkamorn
Phnom Penh

WHO Country Office for China
Dr Yao Ruan
National Professional Officer
401, Dongwai Diplomatic Office Building
23, Dongzhimenwai Dajie Chaoyang District
Beijing

WHO Country Office for Lao People’s Democratic Republic
Dr Matthew Shortus
Technical Officer
PO Box 343 Vientiane, Lao People’s Democratic Republic

WHO Country Office for Viet Nam
Mr Najibullah Habib
Consultant
63 Tran Hung Dao Street, Hoan Kiem District
Ha Noi