

Meeting Report

Technical Consultation on Improving Access to Malaria Control Services for Migrants and Mobile Populations in the Context of the Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion



22–23 May 2014

Ha Noi, Viet Nam



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Greater Mekong Subregion

Convened by:

WORLD HEALTH ORGANIZATION
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Ha Noi, Viet Nam
22–23 May 2014

NOTE

The views expressed in this report are those of the participants in the Technical Consultation on Improving Access to Malaria Control Services for Migrants and Mobile Populations in the Context of the Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion and do not necessarily reflect the policies of the Organization.

This report has been prepared by the World Health Organization Regional Office for the Western Pacific for governments of Member States in the Region and for those who participated in the Technical Consultation on Improving Access to Malaria Control Services for Migrants and Mobile Populations in the Context of the Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion, which was held in Ha Noi, Viet Nam from 22 to 23 May 2014.

CONTENTS

Page

SUMMARY

ABBREVIATIONS

1. INTRODUCTION	1
1.1 Background.....	1
1.2 Objectives	2
1.3 Participants	2
1.4 Appointment of chairpersons	3
2. PROCEEDINGS	4
2.1 Response to artemisinin resistance in migrants and mobile populations in the Greater Mekong Subregion: an operational framework	4
2.2 Regional Artemisinin Initiative: inter-country component.....	5
2.3 Case management	6
2.4 Vector control and prevention	9
2.5 Information, education and communication and behaviour change communication	11
2.6 Private sector involvement	12
2.7 Surveillance, monitoring and evaluation, and information-sharing	14
2.8 Coordination, networking and collaborative mechanisms.....	17
2.9 Country presentations	17
3. RECOMMENDATIONS AND NEXT STEPS	18
3.1 Case management	18
3.2 Vector control and prevention	18
3.3 Information, education and communication and behaviour change communication	18
3.4 Private sector involvement	19
3.5 Surveillance, monitoring and evaluation, and information-sharing	19
3.6 Coordination, networking and collaboration	20
3.7 Next steps	20

ANNEX 1 - LIST OF PARTICIPANTS

Keywords:

Malaria - prevention and control / Mekong Valley / Artemisinins / Drug Resistance /
Transients and Migrants

SUMMARY

The Technical Consultation on Improving Access to Malaria Control Services for Migrants and Mobile Populations in the Context of the Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion (GMS) was held in Ha Noi, Viet Nam, from 22 to 23 May 2014. This is the second planned consultation with national malaria control programmes of GMS countries and key stakeholders to address migrant and mobile population issues, especially in the context of malaria elimination and artemisinin resistance. The objective was to have a prioritized action plan for migrant and mobile populations in the GMS that pushes development partners and donors to support countries in immediate areas of implementation.

The containment of artemisinin resistance in the GMS has reached a critical juncture. A recent breakthrough has shown the K13-propeller mutations as the most important molecular marker for large-scale surveillance efforts to contain artemisinin resistance in the GMS and to prevent its global spread. With the launch of the Association for Southeast Asian Nations (ASEAN) Economic Community fast approaching and the consequent predicted explosion of mass migration for economic purposes, the time to act has never been more urgent.

In addition, cross-border collaboration needs to be improved in terms of timely information-sharing. The methodologies and tools are available, but commitment and funding are needed to move forward. The inclusion of private sector representatives in future strategy and implementation-level meetings will be an important step in facilitating the application of knowledge from public health to the business sector.

As donors look to providing additional support to GMS national malaria control programmes, they are encouraged to adopt a flexible approach to facilitate the development of innovative strategies required to combat this challenging disease.

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
ASEAN	Association of Southeast Asian Nations
BCC	behaviour change communication
CAP	Control and Prevention of Malaria Project
DOT	directly observed treatment
ERAR	Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GMS	Greater Mekong Subregion
IEC	information, education and communication
Lao PDR	Lao People's Democratic Republic
MMP	migrant and mobile population
NGO	nongovernmental organization
RAI	Global Fund Regional Artemisinin Initiative
USAID	United States Agency for International Development
VMW	village malaria worker
WHO	World Health Organization

1. INTRODUCTION

1.1 Background

The World Health Organization (WHO) estimates that there are 1 billion migrants globally, comprising around 214 million international and 740 million internal (i.e. domestic) migrants.¹ Migrants and mobile populations (MMPs), a diverse group including workers, refugees, students, undocumented migrants and others, have different health determinants, needs and levels of vulnerability. Many have been identified as most at risk for artemisinin resistance.

In 2009, it was estimated that the Greater Mekong Subregion (GMS) is home to more than 260 million people, including 3 million–5 million migrants.² Migration across the GMS is common and expected to increase with ongoing economic development in the Region and the commencement of the Association of Southeast Asian Nations (ASEAN) Economic Community in 2015. Thailand is the most popular destination country for labour migrants; however, increasingly, migrants are travelling from China to find work in the Lao People's Democratic Republic and Myanmar.

The majority of cross-border migrants use natural border crossing points, walking across mountains or wading across narrow rivers that divide the GMS countries, rather than official border crossings or check points. While legal migration channels have developed, these are generally not affordable or accessible to most migrants. Instead, migrants continue to cross the borders illegally to work as undocumented workers in a host country.

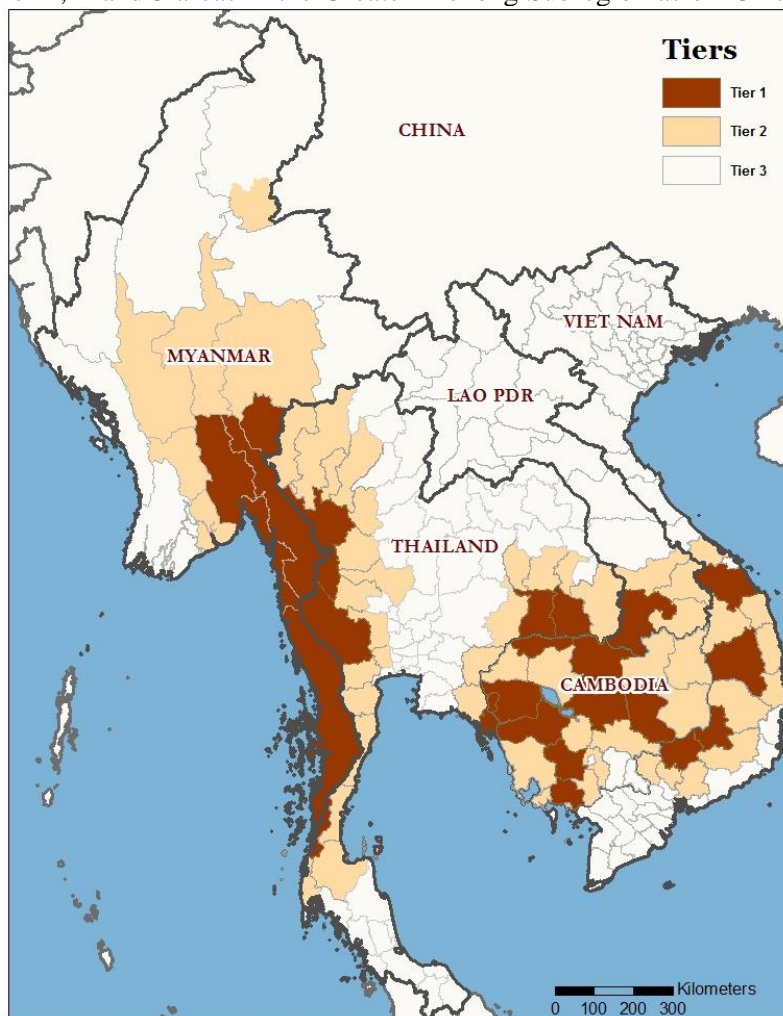
Many economic development projects in the GMS are influencing the malaria situation. The influx of foreign workers into one area can change the malaria parasite species ratio and introduce drug-resistant parasites. Further, without access to health services, migrant workers may self-medicate, and there may be an increase in substandard antimalarials and monotherapies. Further, as local populations are displaced, people may be moved from highland to lowland areas where they have low immunity and no protection against malaria.

Most of the malaria hotspots where antimalarial drug resistance has been confirmed are located right on, or in close proximity to, national road networks and international borders. Higher levels of potential drug-resistant malaria are also reported to be at locations with more dynamic population movements (e.g. Thailand–Myanmar and Thailand–Cambodia). In the GMS, virtually all of the Tier 1 areas (i.e. with credible evidence of artemisinin resistance) are located at the borders (Figure 1).

¹ Humanitarian health action: migrant health. http://www.who.int/hac/techguidance/health_of_migrants/en/. World Health Organization, accessed 3 June 2014.

² General background. http://www.mekongmigration.org/?page_id=25. Mekong Migration Network, accessed 3 June 2014.

Figure 1: Tier 1, 2 and 3 areas in the Greater Mekong Subregion as of 23rd January 2014



Source: WHO, ERAR, updated 23rd Jan 2014

Lao PDR = Lao People's Democratic Republic.

Note: Tier I = areas with credible evidence of artemisinin resistance; tier II = areas with significant inflows of migrants and mobile populations from tier I areas or shared borders with tier I areas; tier III = *P. falciparum*-endemic areas that have no evidence of artemisinin resistance and limited contact with tier I areas.

1.2 Objectives

The objectives of the consultation were:

- 1) to harmonize migrant and cross-border activities proposed with country Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) Regional Artemisinin Initiative (RAI) and other donor and country initiatives focused on artemisinin resistance;
- 2) to standardize key data variables to be collected and platforms for data-sharing across countries; and
- 3) to identify constraints in cross-border collaboration, particularly for malaria control that may need to be addressed through policy dialogue with national authorities.

1.3 Participants

Participants included national malaria control programme representatives from Cambodia, China (although the delegation could not present due to administrative issues), the Lao People's

Democratic Republic and Viet Nam. International organizations sent representatives from the Asian Development Bank; Australian Government Department of Foreign Affairs and Trade; FHI 360; GFATM; Health Poverty Action; International Organisation for Migration; London School of Hygiene and Tropical Medicine; Malaria Consortium; Mekong Basin Disease Surveillance; Population Services International; United Nations Office for Project Services; and the United States Agency for International Development (USAID) President's Malaria Initiative and Control and Prevention of Malaria (CAP). WHO Malaria Officers from GMS countries, Emergency Response to Artemisinin Resistance (ERAR) Office, WHO Regional Office for the Western Pacific and headquarters also participated (see Annex 1 for full list of participants). SC Johnson representatives also participated.

1.4 Appointment of chairpersons

On day 1, Dr Ratanaxay Phetsouvanh, Deputy Director General, Department of Communicable Disease Control, the Lao People's Democratic Republic, was appointed as chair. The co-chair was Dr Tran Thanh Duong, Director, National Institute of Malariology, Parasitology and Entomology, Viet Nam. On day 2, the chair was Dr Siv Sovannarothe, Chief of Technical Bureau, National Centre for Malaria Control, Parasitology and Entomology, Cambodia, and the co-chair was Dr Ratanaxay Phetsouvanh.

2. PROCEEDINGS

Presentations focused on good practices, lessons learnt and the ways forward under six thematic areas: case management; vector control and prevention; information, education and communication (IEC) and behaviour change communication (BCC); private sector involvement; surveillance, monitoring and evaluation, and information-sharing; and coordination, networking and collaborative mechanisms. Presentations were followed by country group work and group discussions on key areas and by cross-country discussions to develop harmonized plans.

2.1 Response to artemisinin resistance in migrants and mobile populations in the Greater Mekong Subregion: an operational framework

Migrant health requires a paradigm shift, from the traditional approach of exclusion of migrants—for reasons of security, disease control and to maintain a national focus—to a modern multidimensional approach that supports inclusion of migrants, reduction of inequalities, social protection in health and multi-country and intersectoral policy development.

There is an urgent need for a comprehensive strategy addressing the issues of MMPs in the context of the emergency response to artemisinin resistance in the GMS, based on the World Health Assembly resolution on the health of migrants and operational framework,³ as well as recommendations from various global and regional committees.

³ Health of Migrants, the Sixty-first World Health Assembly resolution and the Madrid Global Consultation (2008).

**WHO strategic direction on migrants' health:
WHO61/2008/REC/1**

- (1) Promote migrant-sensitive health policies;
- (2) Promote equitable access to health promotion, disease prevention and care for migrants;
- (3) Establish health information systems to track trends in migrants' health (by relevant categories);
- (4) Devise mechanisms to improve health (e.g. identify and fill gaps in health service delivery);
- (5) Gather, document and share information and best practises in meeting migrants' health needs in countries and areas of origin and destination;
- (6) Raise cultural and gender sensitivity to migrant health issues;
- (7) Train health professionals in migration-related health issues;
- (8) Promote bilateral and multilateral cooperation; and
- (9) Contribute to Millennium Development Goals through reduction of the global deficit of health professionals.

Suggested priority activities in such a framework include:

- 1) Monitoring artemisinin resistance in migrant populations;
 - a) Ensure standardization of tools and comparability of data;
 - b) Support appropriate disaggregation and analysis;
 - c) Improve monitoring of health-seeking behaviours, access and utilization of health services;
 - d) Map good monitoring practices, model policies for equitable access and create migrant-inclusive health systems models; and
 - e) Establish useful data for decision-making, and monitor impacts of policies and programmes;
- 2) Creating policies and legal frameworks affecting artemisinin-resistance dynamics in migrants;
 - a) Adopt and implement international standards on the protection of migrants and respect for right to health;

- b) Develop and implement national health policies that incorporate a public health approach to health of migrants and promote equal access, regardless of status;
 - c) Monitor the implementation of relevant national policies, regulations and legislation;
 - d) Promote coherence among policies of different sectors; and
 - e) Extend social protection in health, and improve social security for all migrants;
- 3) Developing migrant-sensitive health systems;
- a) Ensure that health services are delivered to migrants in a culturally and linguistically appropriate way, and prohibit discrimination;
 - b) Adopt measures to enhance the ability of health systems to deliver migrant-inclusive services and programmes;
 - c) Enhance the continuity and quality of care received by migrants in all settings, including from nongovernmental organizations (NGOs) and alternative providers; and
 - d) Develop the capacity of the health and relevant non-health workforce to understand and address health issues associated with migration;
- 4) Building partnerships, networks and multi-country frameworks;
- a) Establish and support ongoing migration health dialogues and cooperation across sectors and among large cities and countries and areas of origin, transit and destination;
 - b) Address migrant health matters in global and regional consultative migration, economic and development processes; and
 - c) Harness the capacity of existing networks to promote the migrant health agenda.

2.2 Regional Artemisinin Initiative: inter-country component

Artemisinin resistance is a regional and global threat that requires regional coordination and harmonization. One of the key elements to fight artemisinin resistance is the need for a “supra-national” approach, including cross-border activities, surveillance and pharmaceutical regulations. In response, in March 2013, the GFATM Board allocated US\$ 100 million for three years to address this serious threat in the GMS (i.e. US\$ 85 million for country components and US\$ 15 million for the inter-country component). The first country disbursement was made in March 2014, and the inter-country component is expected to start in July 2014.

A major public health threat is the spread of artemisinin resistance across Myanmar into the Indian subcontinent and onwards to East Africa. The focus of the inter-country component is speedy implementation of activities along the Myanmar–Thailand border to support mobile populations moving between Myanmar and Thailand. Activities will be adapted subsequently along the Cambodia–Viet Nam and Thailand–Cambodia borders.

The proposed inter-country component activities of the RAI are (1) conducting transborder activities, reaching MMPs; (2) monitoring the impact in areas of focused interventions; (3) integrating data sets from country data systems; (4) conducting independent monitoring and evaluation; and (5) strengthening cross-border communication and collaboration. Other important activities, such as artemisinin combination therapy (ACT) efficacy studies supplementing WHO-coordinated therapeutic

efficacy studies as well as filter paper blood spots for resistance tracking, are funded from other sources.

The RAI regional steering committee, consisting of the five country coordinating mechanisms, five national programmes, China, civil society, the private sector, ASEAN, the Asian Development Bank, other development partners, WHO and academia, called for proposals in February 2014 to select the implementers for the Myanmar–Thailand border activities.⁴ In March 2014, Medical Action Myanmar, Shoklo Malaria Research Unit and Community Partners International were selected with a budget of US\$3 million. Activities are expected to start on 1 July 2014.

Consultation participants discussed malaria elimination plans for the GMS. Next steps include a feasibility study led by WHO, for malaria elimination in the GMS to estimate costs and policy direction. There will be feedback to a technical expert group at headquarters in September 2014, and then the study will be tabled for further action. However, this will not be a WHO elimination plan. The group may set targets for malaria elimination that may not align with country targets, but this is a work in progress. Representatives from the Lao People's Democratic Republic and Cambodia both stated that they have national malaria elimination plans, and felt that harmonizing the whole of the GMS to follow one plan would be difficult. Any regional elimination plan needs to be developed in the GMS and should be supported by WHO and other key donors.

2.3 Case management

2.3.1 Cambodia's experience to date with field implementation of directly observed therapy, standard operating procedures and malaria patient cards

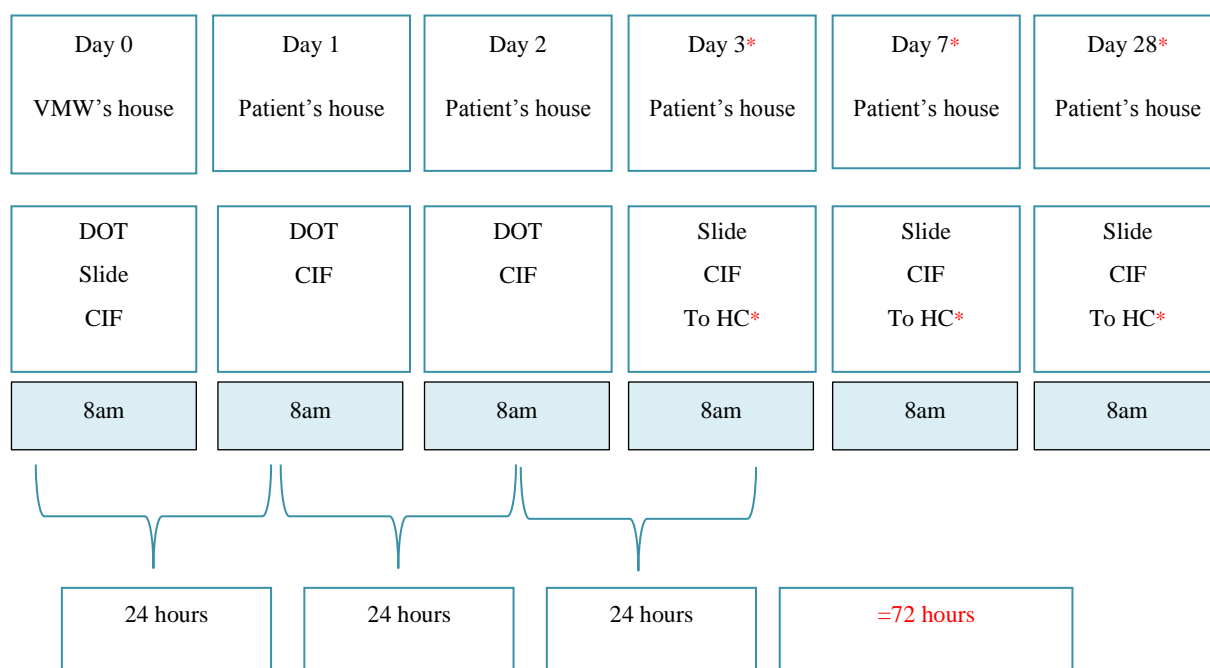
In the GMS, poor drug compliance by patients is an issue that threatens the efficacy of existing ACT, particularly among MMPs. In Cambodia, antimalarial drugs are usually administered as directly observed therapy (DOT) only for the first dose.

The USAID-CAP programme aims to halt the spread of *falciparum* parasites potentially resistant to artemisinin derivatives in specific areas of Cambodia. The programme aims to improve patients' treatment compliance, ensure a DOT approach at the community level, and strengthen comprehensive intervention strategies. Since 2010, the programme has operated in 10 sites in Cambodia, mainly in the north-west, with an intensified DOT approach.

In the programme, patients receive their first dose of dihydroartemisinin-piperaquine at the house of a volunteer mobile worker (VMW) as DOT, and day 2 and 3 doses are received at the patient's house, also under observance of the VMW. Smear samples are taken on day 0 and day 3. If the smear on day 3 is positive for *P. falciparum*, the VMW will make a smear on day 7 and day 28. If the patient has malaria symptoms or the smear is positive on day 7 or day 28, the VMW will refer the patient for second-line treatment at a health centre (Figure 2).

⁴ (1) Transborder activities, including reaching MMPs, surveillance, mapping, information-sharing, diagnosis, treatment and follow-up, and cross-border communication and collaboration; and (2) monitoring impact, including cross-sectional point prevalence surveys in areas of focussed interventions.

Figure 2: Directly observed therapy protocol, Control and Prevention of Malaria programme, Cambodia



* If the smear on day 3 is positive for *P. falciparum*, the VMW will make a smear on day 7 and day 28. If the patient has malaria symptoms or smear is positive on day 7 or day 28, the VMW will refer the patient for second-line treatment at a health centre.

DOT = directly observed therapy, HC = health centre, VMW = volunteer mobile worker.

Source: University Research Company (URC) – CAP-Malaria Project

The programme also enhances DOT by giving VMWs an easy-to-use treatment chart and asking them to separately record dihydroartemisinin-piperaquine doses for each day on the chart. VMWs receive monetary incentives. Health centre staff regularly check that the VMWs are effectively providing DOT through monthly meetings and cross-checking of treatment charts by phoning or meeting with patients and verifying day 3 treatment compliance. Further, a bilingual (i.e. Thai–Khmer) patient card has been developed that records antimalarial drug dosage, days and times of treatment, and malaria symptoms, and can be given to health facilities on both sides of the border.

2.3.2 The Lao People's Democratic Republic's plans for working with migrants and mobile populations

The most at-risk groups for malaria infection are forest and agriculture workers, miners, and those working in other extractive industries. These industries have developed rapidly in the five southern provinces. Those at risk are both registered and unregistered workers; MMPs accounted for 70% of malaria cases in a 2012 study. Unfortunately, given the difficulty in reaching and tracking these workers, there has been poor surveillance of malaria in these groups in the Lao People's Democratic Republic.

The Health Poverty Action RAI project operates in Attapeu, Champasak and Sekong provinces. Given the number of different industries and organizations employing MMPs in Champasak, the project first mapped formal and informal work sites (e.g. mines and dams) and malaria control activities by village, as well as using standard protocols for contacting hard-to-reach populations for malaria prevention. The project employs intensified case detection at development sites and hard-to-

reach villages and identifies and trains mobile vendors to provide health education and referral services.

The project has set up malaria screening points at bus stations and works with cross-border bus companies to provide messages about malaria prevention and treatment through a series of videos and other educational materials that are used both on buses and at bus terminals.

While DOT for malaria treatment is not routinely employed in the Lao People's Democratic Republic, the project uses DOT for some MMPs if they have access to rapid diagnostic tests and ACT.

The project has had good collaboration with some employers of MMPs, but they have also had resistance from certain groups employing both registered and unregistered workers. The project advocates for organizations to understand that having healthy workers is a bonus. While government mandates exist for businesses investing in the country to ensure the health of their employers, it is not clear to what extent these mandates are followed.

Ongoing challenges include identifying, training and then ensuring long-term involvement of site volunteers and mobile vendors. MMP patterns of movement, work in and frequent travel to forests, make it difficult to track and follow up with MMPs. Cross-border collaboration is also challenging.

The Lao People's Democratic Republic needs a specific strategy for MMPs that forms part of the national malaria strategy. This strategy must be integrated into national migration malaria control, diagnosis and treatment. Better collaboration with Viet Nam and Cambodia is required, with better data-sharing and the development of an inter-country data-sharing platform.

Given that some provinces have confirmed artemisinin resistance, additional and strategic funding is required. Further, continued advocacy and the increased involvement of non-health stakeholders (i.e. employers of MMPs), especially the private sector and military, is crucial for the sustainability and reach of malaria treatment and prevention programmes in the Lao People's Democratic Republic.

2.3.3 Myanmar: migrants and mobile populations and malaria-screening points

Since 2012, the national malaria control programme of Myanmar has operated 33 malaria-screening points in six states, mainly bordering Thailand. The objective is to screen MMPs irrespective of fever or symptoms. The screening sites are strategically located near entrances to mines and forests, on major roads and border gates, and at bus terminals. Tens of thousands of people have been screened over the last two years, and positive cases have been identified at all of the sites (43% of positive cases were infected with *P. vivax*, 36% with *P. falciparum* and 21% had mixed infections). The International Organisation for Migration also operates hundreds of malaria-screening points in Myanmar in central and remote villages, in large migrant settlements (usually stable migrant populations), small migrant settlements (usually for seasonal and temporary workers) and at strategic sites (e.g. bus stops and other transit points in malaria hot spot areas).

In Myanmar, there has been good progress in the response to malaria in MMPs, including the development of prevention and treatment guidelines as well as a simplified version for use by volunteers (available in the Myanmar language). Outreach is conducted to assess the efficacy of impregnated clothes and repellents among MMPs in rubber plantations.

However, challenges remain. There are missed opportunities to gather important information in current data collection systems (e.g. the occupation of the screened person is not collected, village information including its epidemiological profile is not always available and there is no data point that

distinguishes between MMPs and ordinary populations). Organizations are recommended to continue to increase the number of screening points along the international borders using updated epidemiological information and current mapping of MMPs to select sites.

The consultation participants then discussed methods for deciding the most strategic and cost-effective places for malaria-screening points. Is it important to have screening points just in those areas with large numbers of malaria cases? Or is there a better way of deciding? Screening points may have a purpose beyond malaria treatment and containment, and data collected at the screening points can serve as sentinel surveillance. Also, screening points can serve as a place to focus BCC and target those most at risk with health education.

The discussion also focussed on the cost-effectiveness of DOT and the evidence base for giving malaria treatment as DOT. The Cambodia national malaria control programme representative stated that in low-burden countries with high resistance, such as Cambodia, the complete dose is crucial and so DOT is effective; in other countries, the situation is different. Participants agreed that focussed operational research on malaria treatment as DOT is needed.

2.4 Vector control and prevention

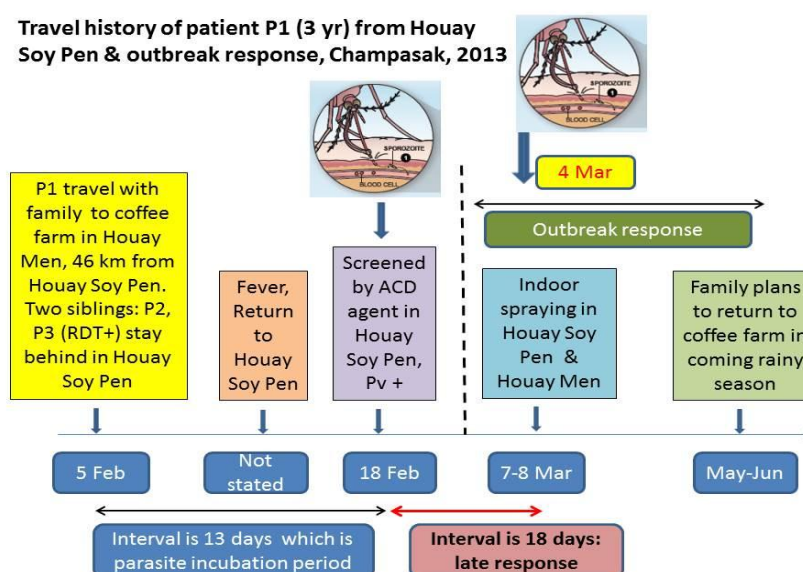
2.4.1 Vector control and prevention among migrants and mobile populations in an outbreak setting

Recent malaria outbreaks in the Lao People's Democratic Republic have been attributed to migrant workers moving in and out of malaria-endemic areas, deforestation, rapid economic development and changes in land use. In 2011, there was a dramatic increase in the annual parasite incidence as well as malaria deaths. Artemisinin resistance has now been confirmed in Champasak and Attapeu provinces. These recent changes in the Lao People's Democratic Republic's malaria situation require an urgent response for outbreak control and the development of an antimalarial drug resistance containment strategy.

The vector control and outbreak response in the Lao People's Democratic Republic has been supported by Health Poverty Action. The response started in Attapeu Province in 2012 and expanded to six southern provinces in 2013. At the time of the meeting, 2500 patients had been detected during intensive "screen-and-treat" activities in targeted villages. The project has also conducted indoor residual spraying in selected villages in outbreak areas, provided forest prevention kits to migrant workers, health education and mosquito repellent to soldiers and insecticide-treated bed nets and insecticide-treated hammock nets in villages, health centres and private sector clinics and pharmacies.

Figure 3 gives an example of responsive focal spraying in Champasak province. After identifying a positive malaria case at the health centre near the coffee farm, indoor residual spraying is conducted in the family's houses in both their home village and the village to which they travel for work. Unfortunately, in this example, it was a late response to the identification of a positive malaria case.

Figure 3: Responsive focal spraying, the Lao People's Democratic Republic



Source: Center of Malariology, Parasitology and Entomology (CMPE), Lao PDR

In the Lao People's Democratic Republic, vector control is a recent activity, and the best modes for distribution of long-lasting insecticide-treated hammock nets have yet to be established. Further, the use of personal repellents is still to be studied, and there may be poor compliance as seen in other areas.

2.4.2 Malaria prevention: options for forest and mobile populations

Many mosquito species bite from 18:00 to 22:00 when people are not yet asleep. Also, many forest workers work through the night. This reduces the relevance of bed and hammock nets for malaria prevention, and points to the need for new strategies to prevent mosquito bites for people who are not sleeping.

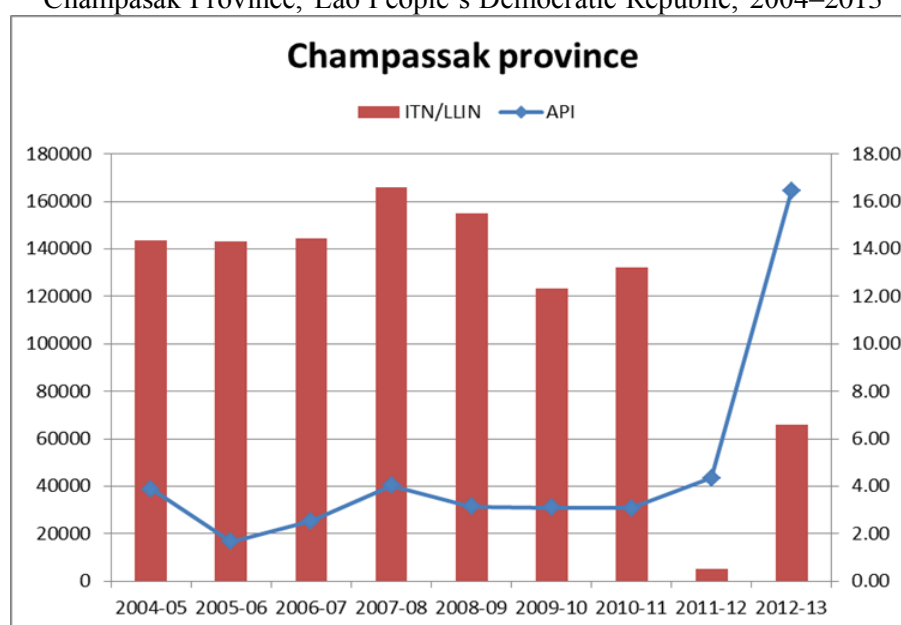
Responsive focal spraying involves selective indoor residual spraying based on screening and surveillance (Figure 3). In theory, all six GMS countries conduct responsive focal indoor residual spraying either in the event of outbreaks in more endemic areas or when transmission foci are identified as a result of active case detection in less endemic containment areas. However, the use of responsive focal spraying is also very limited, technical capacity is suboptimal, operating procedures are not clearly set up and thresholds for implementation are not well defined.

The undersupply of long-lasting insecticidal nets and long-lasting insecticidal hammock nets in malaria outbreak areas can have a serious impact on parasite incidence. Figure 4 demonstrates that a gap in net supply in Champasack province, the Lao People's Democratic Republic, appears to be correlated with an increase in annual parasite incidence. When net supply is limited, sustaining high coverage and efficiency in selected areas is important. This requires timing net replacement to match the end of life of nets and regular assessment of accurate coverage and access data. Further, those with access to such nets need to use them effectively; thus, BCC is important.

Long-lasting insecticidal nets and long-lasting insecticidal hammock nets are effective, and research has shown a reduction in mosquito bites and malaria incidence in randomized controlled trials. However, more research is needed on the user acceptability of such nets and their durability, particularly for forest workers and other mobile populations. The effectiveness of topical repellents

for forest workers is less certain, as there is low compliance and little data on user preference and acceptability.

Figure 4: Number of long-lasting insecticidal nets distributed and annual parasite incidence, Champasak Province, Lao People's Democratic Republic, 2004–2013



Source: Center of Malariology, Parasitology and Entomology (CMPE), Lao PDR

2.5 Information, education and communication and behaviour change communication

2.5.1 Communication and advocacy tailored to migrants and mobile populations

Labour migrants are often stigmatized, due to common misconceptions about their poor health and the burdens placed on the health systems of countries receiving them. However, migration is not necessarily a health risk in itself; cross-border and mobile labour migrants experience bad conditions at various stages of the migration cycle that give them higher exposure to diseases or situations that affect their general well-being.

To facilitate policy change, which can protect MMPs, a strong multisectoral partnership is needed to facilitate access to hard-to-reach people and places. This means engaging police, immigration officers and employers of migrants as key partners, as they can ultimately allow or restrict movement of or access to migrants. Working more closely with stakeholders beyond the health sector can predict migration patterns and potential malaria hotspots.

Examples of advocacy activities with other sectors include working with police and immigration officers to explain the public health if patients cannot access health services; advocating for collaboration with employers or managers of migrants by clearly explaining the cost-benefit of having healthy workers; and advocating for key decision-makers in the GMS to divulge information about large-scale development projects, agricultural farming and logging in endemic areas before they begin so that appropriate vector control and malaria services can be provided ahead of time.

2.5.2 Training of trainers in communication and community mobilization skills for malaria staff members in the Lao People's Democratic Republic

Positive deviance is an asset-based behaviour change approach that highlights, appreciates and builds on the positive behaviours of the community. In every community, there are individuals whose uncommon positive behaviours enable them to find better solutions to problems than their neighbours

who have access to the same resources. The Malaria Consortium is piloting positive deviance in collaboration with national malaria control programmes and partners in Cambodia, Myanmar and Thailand.

The project involves an initial period where community norms are investigated and positive deviant individuals (i.e. role models) and their accessible and replicable behaviours and strategies are identified. Regular interactive sessions are then conducted by volunteers to share positive deviant behaviours with the community. The pilot had not yet been evaluated at the time of this consultation.

Positive deviance is a community mobilization tool that develops a strong sense of ownership. Further, positive deviance fills in a formative research gap by helping understand context and normative behaviours and enabling the development of tailored communication strategies. It is, however, human-intensive and requires volunteers who have good facilitation skills.

An assessment conducted in Champasak and Saravan provinces in the Lao People's Democratic Republic in March 2013 used focus groups and in-depth interviews with community members, migrant workers, volunteers and health staff. Results showed that communities need to be actively engaged in malaria activities, especially in an outbreak situation. Results also showed that volunteers need training on communication and community participation skills, and linkages between volunteers and health staff need to be strengthened.

Train-the-trainer activities were planned to improve participants' understanding of communication processes, adult learning and interpersonal communication skills. They also aimed to sensitize participants to the important role of communities and how to ensure their active participation in malaria and to equip them with skills to conduct "trickle down" training. The training curriculum included adult learning methodologies, effective communication and health education skills and methods to encourage community participation. Training also encompassed mapping and developing seasonal calendars.

Participants then discussed different methods of providing malaria and other health messages and agreed that too often, the development of IEC and BCC tools and programmes did not involve the community, and that community approaches, such as positive deviance, were valuable. Other methods are useful as well, and it is better to use multiple strategies, but the information provided through different modes should be consistent. Others commented that approaches should be more thoroughly evaluated. It was suggested that a regional working group for IEC and BCC in malaria prevention and treatment should be convened, and the ERAR hub is happy to support this.

2.6 Private sector involvement

2.6.1 Private sector engagement for malaria control and containment of artemisinin resistance: Myanmar's experience with a public-private partnership accreditation scheme

In the GMS, antimalarial drug resistance is often first identified at the Thailand-Cambodia border; it then spreads from the GMS to India and from there to Africa. Thus, containing malaria resistance in Myanmar, the gateway between the GMS and India, is crucial to stop the parasite resistance to artemisinin in Africa and the rest of the world.

Recent large-scale infrastructure projects (e.g. in oil and gas, mining and highways) and other private sector activities can increase the vector population in Myanmar. Also, there are large MMPs in Myanmar (1.2 million–1.6 million) employed by oil, gas, construction and extractive industries. With the start of the ASEAN Economic Community in 2015, there will be more movement between Asian countries.

In recognition of the importance of public-private partnerships in the prevention and treatment of malaria and the containment of artemisinin resistance, the first Malaria Forum on Corporate Sectors

and Non-State Actors' Response to the Threat of Artemisinin Resistance in Myanmar was held in November 2013. The meeting output was an agreement on an accreditation scheme that will incentivize companies to take part in the global emergency response to artemisinin resistance. Over 170 representatives from the private sector, civil society, government, multilateral and bilateral agencies, research and media agencies attended this forum. Seventeen companies and organizations signed up to promote universal district health coverage, and towards free provision of quality-assured malaria diagnosis, treatment and prevention.

Also in Myanmar, a private sector mapping initiative provides valuable information about those private organizations that could be targeted for involvement in the response to malaria and artemisinin resistance. Information about private companies (e.g. mining and rubber plantations) is gathered in targeted districts. For example, in one district in Myanmar, the names of all registered mining companies, the exact location of mines, land area of the mines, as well as how many people work in the mines will be recorded.

In Dawei District in Myanmar, a deep-sea port and industrial estate has recently been developed. The sea port is intended to become one end of a land bridge for freight, linking India, Africa and Europe with China and other South-East Asian countries and replacing the longer sea route through the Strait of Malacca. Mapping in Dawei found that the project land covers 205 square kilometres and includes transborder road networks, a flood control project, small port construction, quarrying and relocation housing projects. There are over 2300 employees working on the sea port, and 15 local companies are involved, including those being outsourced. Other industries in Dawei include fisheries, agriculture, construction, manufacturing, electricity and energy. The mapping also found that a large proportion of workers are at risk for malaria due to their work place environment and because Dawei is a malaria-endemic area.

Another example of an effective public-private partnership in Myanmar is the corporate social responsibility programme of Total Oil and Gas Company. Integrated health care delivery programmes provided by Total include regular doctor visits, treatment and referrals, blindness prevention, HIV care, tuberculosis diagnosis and treatment, vaccinations and antenatal care. The company provides support to neighbouring communities including upgrading hospital facilities, establishing village clinics and sub-village clinics, and supplying medicines and ambulances.

2.6.2 National survey to map private and family-run plantations, linking programme efforts and plantation malaria workers

Population Services International conducted a national survey in Cambodia to map family-run and private rubber and cassava plantations as well as nearby private companies (e.g. hydroelectric, road construction and mines). The survey estimated the number and type of workers by season and assessed the availability and accessibility of health facilities to identify opportunities to provide malaria treatment and testing services.

Results showed that plantations were mainly Cambodian-owned with some owned by those from China or Viet Nam; rubber plantations were predominantly clustered in the north-east and cassava in the west. They also found that plantations and mines mostly employ local workers, but hydrodams and roads employ more migrants and mobile workers, and most workers came with their families. Very few enterprises (i.e. 20%) had health services for their workers on site, and usually this was only a medicine cabinet stocking not much more than paracetamol. Of those with onsite health facilities, only 22% and 34% respectively had malaria testing and treatment services available.

Based on this data, Population Services International set up a plantation programme to establish malaria services on plantation sites. Plantation owners signed a memorandum of understanding with Population Services International. An intensive schedule of introductory and follow-up visits was created to meet with plantation owners in four provinces to gain access and explain the programme's

benefits. Advocacy workshops were held with the national malaria control programme, provincial health districts, plantation management staff and Population Services International in each province. Plantation malaria workers were identified and provided with training so that they could conduct rapid diagnostic testing, understand malaria treatment with ACT and complete a patient registration form. A medical officer visits plantation malaria workers on a monthly basis.

Providing malaria case management services at places where migrants work is easier than trying to catch them as they move from one site to another, although it is still difficult to start this type of work in the plantations.

2.7 Surveillance, monitoring and evaluation, and information-sharing

2.7.1 Monitoring and evaluation issues and a proposed framework for monitoring migrant and mobile population interventions

WHO provides various guidance documents for malaria surveillance, including the Test, Treat and Track (T3) initiative, which calls countries to test all suspected malaria cases, treat all confirmed malaria cases according to national treatment policy or guidelines and track all malaria cases through a timely and accurate surveillance system.

The application of the T3 initiative in the context of work with MMPs raises several questions. How can all mobile workers with suspected malaria be tested when they are hard to reach and often far from traditional testing sites? Can polymerase chain reaction testing be conducted in forest settings? How can MMPs be followed up and treated according to national policies when they move frequently and have no fixed addresses?

The *Emergency response to artemisinin resistance in the Greater Mekong Subregion framework for action (2013–2015)* includes a set of key indicators including impact indicator No. 10 (focussing on access to MMPs). The collection of data related to this indicator has been problematic, as only two countries in the GMS submitted data to ERAR on migrants accessing services in the last year. It may be that NGOs or other partners have access to this data. Therefore, ERAR encourages countries to form a subcommittee focussing on MMPs that will, among other specific tasks, collate relevant and available data on their access to interventions and services.

The following indicators are suggested for countries to consider towards monitoring malaria testing, treatment and tracking in MMPs:

- 1) Studies conducted, pilot projects implemented, and results used to inform programme decisions and actions;
- 2) Innovative evidence-based interventions identified and incorporated into national malaria strategies;
- 3) Comprehensive interventions implemented based on policies and strategies targeting MMPs;
- 4) Data (i.e. percentage of coverage) on MMPs are routinely collected, disaggregated, used, reported and shared (although this requires a denominator that may be difficult to collect);
- 5) Collaborations on policies and strategies targeting MMPs (i.e. percentage of planned joint activities implemented) with partners, programmes (e.g. HIV, tuberculosis, immunization and noncommunicable diseases) and sectors; and
- 6) Funding dedicated for MMP interventions (i.e. percentage of budget provided).

To move ahead with the monitoring of interventions for MMPs in the GMS, it is necessary to identify MMP-related indicators and incorporate them into monitoring and evaluation plans and national strategies of GMS countries. It will also be necessary to update and standardize monitoring and evaluation tools to incorporate MMP indicators. Further, there must be agreement on an appropriate data-sharing mechanism across the GMS including an information technology platform and database at the regional level using a few key indicators. The data collected should be used so that within countries and across the Region, all stakeholders can be advised of suspected artemisinin resistance promptly.

To establish a coordination mechanism for surveillance, monitoring and evaluation in the GMS, the ERAR Surveillance Monitoring and Evaluation Technical Working Group will be formed in June 2014 and will work with national malaria control programmes to improve monitoring of MMP interventions in the GMS.

2.7.2 Options for cross-border surveillance and data-sharing

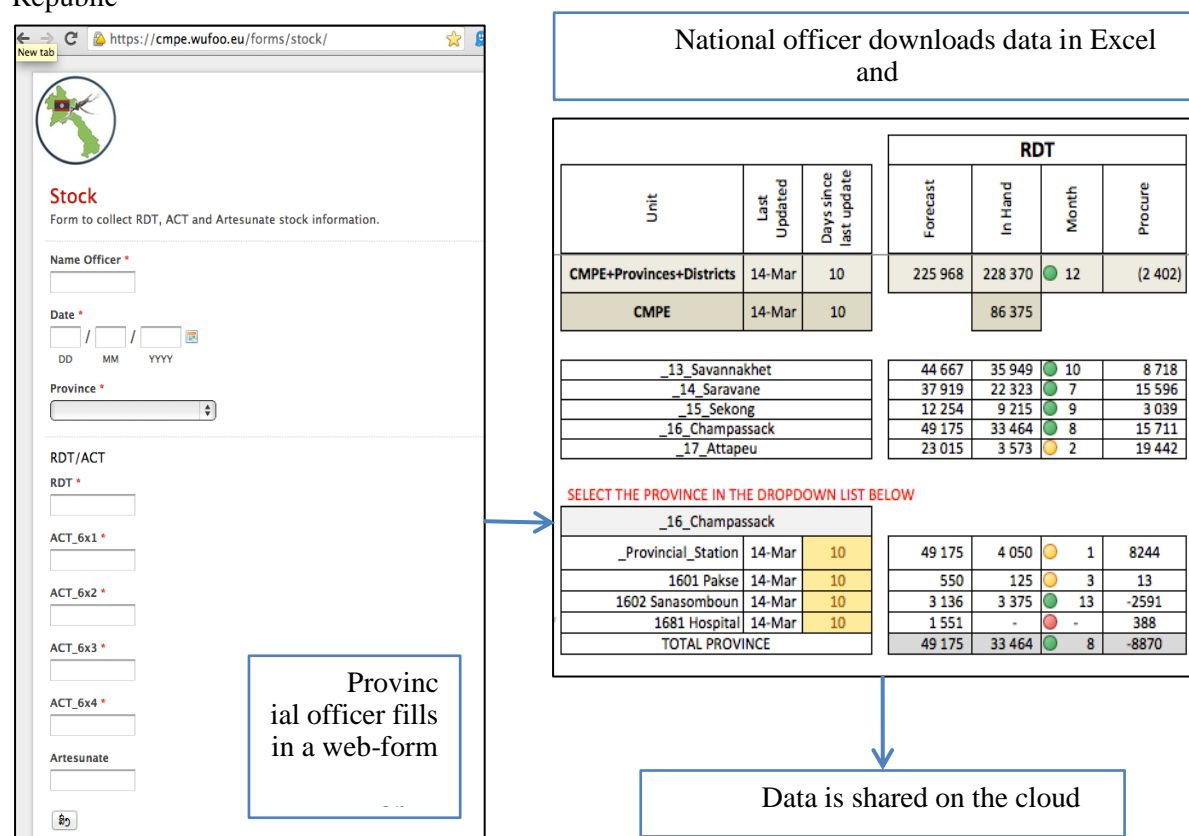
To appropriately respond to the threat of artemisinin resistance and contain malaria outbreaks in the GMS, information must be accurate, timely and shared between countries in the GMS. However, at the moment, no mechanism exists to routinely share data.

The creation of a unified database, which includes all data collected by GMS countries, would be extremely difficult. However, there are commonalities between all the national systems and indicators on which all countries report. It could be possible to rapidly develop a small-scale common sharing platform for these indicators.

Following malaria outbreaks in 2012 and in the face of a rapidly changing epidemiological profile in the Lao People's Democratic Republic, there was a need to quickly and accurately share programme and epidemiological data across the provincial malaria control offices and with the national programme. Different approaches to data-sharing were trialled. The three most successful approaches used a web form for data collection, a highly customized Excel sheet for analysis and routine reporting, and a cloud solution for sharing data (Figure 5).

The advantages of this system include a multiplatform web form, which can be used on computers, smart phones and tablets and has a quick deployment and instant update function. Data sent through email can be problematic with large attachments and no built-in system to track different document versions. Cloud computing means that data are stored in a central location on the Internet, others can easily view and edit files, and new versions of the file can be accessed automatically. Importantly, this system can work online and offline.

Figure 5: Data flow in the national malaria data-sharing platform, the Lao People's Democratic Republic



Source: Center of Malariology, Parasitology and Entomology (CMPE), Lao PDR

Using a similar system for regional data-sharing is possible. Each country could have a folder located on a cloud-based platform; accessible by all relevant staff as well as stakeholders from bordering provinces in neighbouring countries. A common web form could be developed for provincial officers to report data related to common indicators. A regular provincial bulletin could be generated by the monitoring and evaluation unit of each country. Bulletins and other relevant data could also be shared via cloud.

Obstacles to creating a cloud-based regional data-sharing system include inaccuracy of available data, uploading of confidential information on the cloud-based platform (however, much confidential information is already ethically shared across the GMS) and limited Internet access.

Consultation participants then discussed how to move ahead quickly with the development of a regional database. Participants agreed that the model used in the Lao People's Democratic Republic seemed feasible. At the time of the meeting, the ERAR was supporting a consultant to develop such a database. The ERAR also plans to establish a situation room so that as information becomes available, it can be shared in real time with countries.

Participants also discussed that data should be shared, but that ultimately data belong to the country where they were collected. The ERAR Director also mentioned that the GMS Working Group on Surveillance, Monitoring and Evaluation would start meeting in June 2014.

2.8 Coordination, networking and collaborative mechanisms

2.8.1 China's joint cross-border activities to control malaria

Yunnan province in south-west China, shares borders with Myanmar, the Lao People's Democratic Republic and Viet Nam. There are 18 official and 643 unofficial ports of entry into Yunnan, and an annual MMP count of 14 million. However, malaria incidence in Yunnan has drastically decreased over the last two decades. Most malaria cases reported in Yunnan in 2012 were imported, primarily from Myanmar, but also from Cambodia, the Lao People's Democratic Republic and Thailand.

The cross-border Malaria Joint Prevention and Control Programme started in 2005 and is funded by the Ministry of Health. This programme supports joint prevention and control programmes in China–Myanmar, China–the Lao People's Democratic Republic and China–Viet Nam border areas. Activities include setting up an epidemic information exchange and joint working mechanism; training grassroots malaria prevention personnel; conducting joint health education on malaria prevention and control along border areas; organizing Chinese experts to provide technical assistance to other country counterparts; and providing laboratory and other material support to border health facilities of both sides.

2.8.2 Mekong Basin Disease Surveillance

Health ministers of the six GMS countries (i.e. China, Cambodia, the Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam) signed a memorandum of understanding on Mekong Basin Disease Surveillance cooperation in Yunnan province in November 2011. The six countries decided to carry out joint surveillance cooperation on malaria, dengue fever, bubonic plague, HIV/AIDS, tuberculosis, serious diarrhoea including cholera, emerging infectious diseases such as severe acute respiratory syndrome and avian influenza A (H5N1).

The Mekong Basin Disease Surveillance coordination mechanism consists of an executive board, regional coordinating office, six country coordinating mechanisms as well as subnational coordinating teams. The mechanism's core strategies are cross-border cooperation, zoonoses, community-based surveillance, risk communications, policy research, information and communication technologies, laboratory skills and epidemiology.

Systems and frequency of cross-border information exchange depend on the disease. For example, notification of cases of H5N1, severe acute respiratory syndrome and cholera are shared within 24 hours of diagnosis. Malaria case numbers, deaths and locations are shared monthly.

Consultation participants discussed that within Mekong Basin Disease Surveillance, the majority of diseases that are notifiable are under the International Health Regulations. If drug-resistant malaria was included, it could facilitate data-sharing across the GMS and globally. The decision to include a new disease is made by the WHO Director-General based on recommendations by an expert committee, and there are criteria for inclusion in this list such as whether the disease event is unusual, whether it has serious public health impacts and whether it has the potential to affect international travel or trade. Drug-resistant malaria is unlikely to fit these criteria.

2.9 Country presentations

The final session of the meeting involved different country groups presenting their priorities in the context of the six themes discussed.

3. RECOMMENDATIONS AND NEXT STEPS

3.1 Case management

- 1) All DOT strategies should be reviewed, examining feasibility. Where relevant, DOT strategies should be initiated or expanded to bordering towns. Cross-border referral strategies, guidelines and protocols should also be developed.
- 2) Advocacy should be continued, and the involvement of non-health stakeholders, especially the private sector and military, should be increased.
- 3) Cost-effective migrant and health access mapping techniques should be conducted.
- 4) Cross-border collaboration should be improved.
- 5) The definition of MMPs should be standardized, well understood and accepted.
- 6) More data (i.e. a better understanding of MMP profiles) should be collected.
- 7) The number of malaria-screening points along international borders should be increased and chosen based on epidemiology and catchment areas of MMPs. Operational research to support the strategic placement of screening points should be conducted.
- 8) Malaria services should be integrated with other existing cross-border and migrant disease services, such as those for HIV and tuberculosis.
- 9) Health education at borders and screening points should be evaluated.

3.2 Vector control and prevention

- 1) A multisectoral approach to malaria control should be developed for the GMS.
- 2) Private sector initiatives should be engaged to ensure impact assessments are part of development schemes.
- 3) Legislation governing land use and forest protection should be reviewed and strengthened, given the risk on malaria control efforts.
- 4) Partners should work together to develop a suitable strategy and methodology to simplify insecticide-treated net and repellent coverage, access data gathering and to avoid any duplication of activities.
- 5) Operational research should be supported to better understand user perceptions and acceptability of current personal vector control strategies.

3.3 Information, education and communication and behaviour change communication

- 1) Collaboration should be encouraged from the police and immigration authorities to improve MMP access to health services.
- 2) Collaboration should be encouraged from employers or managers of migrants by clearly explaining the cost-benefit of having healthy workers free from malaria.

- 3) Malaria awareness should be promoted among potential migrants before they leave the country. This includes undocumented workers' access to diagnosis and treatment at destination countries.
- 4) Key decision-makers in the GMS can be encouraged to divulge information about large-scale development projects, agricultural farming and logging in malaria-endemic areas before they are underway.
- 5) Adjoining cross-border communities should be considered a single, extended town due to the interaction between the populations on both sides.
- 6) Community ownership and community mobilization are crucial; thus, communities should be actively engaged in malaria activities, especially in an outbreak situation. More operational research should be conducted, and current approaches evaluated to find the most effective methods.
- 7) A regional working group focusing on IEC and BCC should be convened.

3.4 Private sector involvement

- 1) Private sector, workforce and health facility GPS mapping should be conducted, especially in newly designated tier 1 areas.
- 2) Evidence should be provided to build a strong business case for malaria prevention for companies and corporate sector stakeholders to prioritize malaria in their programmes.
- 3) Malaria case management services should be provided at places where migrants work, and a mix of services should be provided at different migrant contact points.
- 4) Responses should be tailored to the situation; for example, in some countries, it is more relevant to focus on labour migrants moving within the country than across borders.
- 5) Approaches should be adopted, such as corporate social responsibility, which can rapidly adapt to match the situation on the ground, as there is rapid growth in the GMS and changing patterns of employment.

3.5 Surveillance, monitoring and evaluation, and information-sharing

- 1) The current capacity to carry out effective surveillance, monitoring and evaluation activities should be assessed, especially at the district level.
- 2) MMP-related indicators should be identified and incorporated into national monitoring and evaluation plans, malaria strategies and budgets.
- 3) Surveillance, monitoring and evaluation tools should be updated and standardized, including data management tools, to incorporate MMP indicators.
- 4) A data-sharing mechanism should be agreed on across the GMS, including the information technology platform and database at the regional level.
- 5) A coordination mechanism should be established for surveillance, monitoring and evaluation. Periodic training and routine supervision at all levels should be conducted.

- 6) Innovative approaches should be used through m-health and e-health applications to strengthen real-time reporting, improve monitoring and evaluation and strengthen disease surveillance systems.

3.6 Coordination, networking and collaboration

- 1) While there is increasing interest in setting up regional and GMS coordinating bodies, there should be more attempts to examine current platforms (e.g. Mekong Basin Disease Surveillance).
- 2) Areas of collaboration between Mekong Basin Disease Surveillance and ERAR should be strengthened.
- 3) Mekong Basin Disease Surveillance should be explored in the proposed ERAR alert and response system (i.e. the situation room).
- 4) More information should be gathered on the Lower Mekong Border Initiative and China's joint cross-border activities to control malaria.

3.7 Next steps

The outcomes of both MMP meetings to date will be consolidated into an action plan. The WHO ERAR Malaria and Border Health Officer expects to be complete this plan 10 June 2014 and share the plan with the six GMS national malaria control programme managers for approval. In addition, both meeting reports will be shared with all participants of both meetings as drafts, pending clearance from WHO.

The next steps are to allow country programmes the opportunity to organize national stakeholder discussions on the MMP action plan. This can be planned from 10 to 30 June 2014 with the following objectives:

- 1) to allow national malaria control programmes to invite a broader level of participants from ministries of health, regional and provincial staff and NGOs to review this prioritized list of activities for MMPs and to further improve it;
- 2) to complete the Excel matrix exercise;
- 3) to facilitate a budgeting of the outlined activities; and
- 4) to obtain an endorsement of this action plan from all stakeholders.

Following this, the ERAR will convene a key stakeholder consultation involving national malaria control programmes, development partners and donors to prioritize activities for immediate funding for 2014.

ANNEX 1: PARTICIPANT LIST



Technical Consultation on Improving Access to Malaria Control Services for Migrant/Mobile Populations in the context of the Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion

**22-23 May 2014
Meliá Hotel Hanoi
Hanoi, Viet Nam**

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