

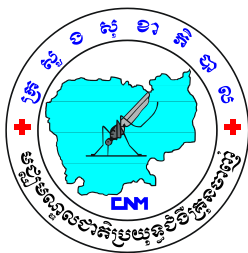
# STRATEGY TO ADDRESS MIGRANT AND MOBILE POPULATIONS FOR MALARIA ELIMINATION IN CAMBODIA

*MMP Strategy-March 2013*



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## Acronyms, Abbreviations, and Technical Terms

ACD	Active Case Detection
ACT	Artemisinin-Based Combination Therapy
ASEAN	Association of Southeast Asian Nations
BCC	Behaviour Change Communication
BMGF	Bill and Melinda Gates Foundation
CNM	National Centre for Parasitology, Entomology and Malaria Control Cambodia
DOT	Directly-observed Treatment
EDPT	Early diagnosis and prompt treatment
FHI360	Family Health International 360
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
HC	Health Centre
IEC	Information, Education, and Communication
IRD	Institut de Recherche pour le developement – Institute of Research for Development
ITN	Insecticide Treated Nets
LLIHN	Long Lasting Insecticidal Hammock Nets
LLIN	Long-Lasting Insecticidal Net
KAP	Knowledge, Attitude, and Practice
MC	Malaria Consortium
MMP	Mobile and Migrant Population
M&E	Monitoring and Evaluation
MMW	Mobile Malaria Worker
NGO	Non-Governmental Organization
OD	Operational District
Pf	<i>Plasmodium falciparum</i>
Pv	<i>Plasmodium vivax</i>
PD	Positive Deviance
PFD	Partners for Development
PSI	Population Services International
RDS	Respondent-Driven Sampling
RDT	Rapid Diagnostic Test
SMS	Short Message Service
URC	University Research Co. LLD

USAID	United States Agency for International Development
VHSG	Village Health Support Group
VMW	Village Malaria Worker
WHO	World Health Organization

## EXECUTIVE SUMMARY

The movement of populations in malaria-endemic areas poses a major threat to the spread of artemisinin resistance along the Cambodia–Thailand border. Mobile and migrant populations (MMP) are usually poorly connected to routine public health interventions and surveillance systems and therefore represent a vulnerable group with regards to the malaria control. To address this group, a MMP strategy was developed to support reaching the goals of the National Malaria Elimination Strategy 2025 through adapting and better targeting interventions to these hard-to reach populations. This strategy describes the process of characterising and defining the MMPs in Cambodia, identifying the different activities and risks as well as the types of intervention strategies needed to appropriately target this high malaria risk group in Cambodia.

A review of existing literature on previous work on mobile and border populations was conducted in September 2012. In addition, two stakeholder workshops were conducted in Cambodia to collect information on all previous migrant related research as well as proposed interventions for each migrant profile group. A working group composed of government and non-government bodies working with migrants was set up to develop the MMP strategy.

The proposed MMP Strategy focuses on (i) forest exposure as a proxy to malaria risk, and (ii) the working location of the MMP. Based on these considerations, six MMP profiles were defined including seasonal/construction/mine/forest workers, security personnel, visitors and cross-border travellers. To assist in identifying the risks groups, a malaria vulnerability index was developed based on a set of scores covering knowledge, prevention measures, housing, and immune/risk status characteristics. Likewise, a forest/malaria exposure index was developed based on a set of scores covering work area/forest location-duration of stay in forest-housing type-prevention measures. Lastly, an access/outreach index was also developed based on access to/from work area/location-link affiliation-point of contact. Based on these indexes, a MMP matrix was developed to identify those MMP groups at highest risk. A detailed description of these groups will be presented as well as the proposed strategy-interventions packages for each risk group and the specific epidemiological context. A special focus will be given at maximising coverage, accessibility and acceptability of the interventions for each of the MMP groups.

The proposed MMP strategy is the first official and government-led working-strategy for migrant populations in the context of malaria elimination in Cambodia. Targeting the greater number seasonal workers could be the first priority as they are the easiest to reach and the majority. Operational research and intervention piloting and evaluation are also needed to identify optimal approaches for reaching these remaining MMP vulnerable populations.

## **Acknowledgments**

We would like to thank the National Centre for Parasitology, Entomology and Malaria Control (CNM); without the input by these individuals, this strategy report would not have been possible.

We would like to thank the various organisations who participated in the workshops as well in the working group from which this strategy was derived including, but not limited to: CNM, PFD, FHI360, BBC M A, IOM, IRD,WHO, PSI, and URC.

We thank the Global Fund for their support.

## INTRODUCTION

### Malaria and MMPs in Cambodia

Malaria continues to remain a major public health concern in Cambodia despite the steady reduction in the total number of clinically diagnosed and treated malaria cases as well as in the severe case fatality rate over the last thirteen years; morbidity and mortality due to malaria remain high compared to other countries in the region (1). In Cambodia, the 2009 containment survey found the prevalence of malaria among mobile populations (which included travellers, visitors, and forest goers) to be substantially higher than the general population. Among mobile populations, forest goers had the highest malaria prevalence rates (4.1% by microscopy and 11.4% by PCR) (2).

In recent years, large-scale cross-border collaboration has been used to target MMPs in the Greater Mekong Subregion, including Cambodia, through a two year Bill and Melinda Gates Foundation funded containment project. Border populations remain a key area of focus for malaria programs, however, research suggests that the majority of movement amongst MMPs in Cambodia is internal (3, 4). Therefore, there is a need to strengthen efforts on a domestic level to reach those moving about the country, as well as those moving internationally. According to research findings (5), those mobile populations come to the new place with a variety of purposes which include farming work, investment, trade, visiting relatives, and eventually a prospect to find a new settlement.

Malaria control amongst Mobile and Migrant Populations (MMPs) is a great challenge in Cambodia as members of these populations often travel between endemic and non-endemic areas (5); mobility can increase risk-taking behaviours; poverty increases susceptibility; patterns are unpredictable due to changing land use; and sometimes illegal status leads to avoidance and reductions in care seeking behaviour. Many of these factors contribute to the high incidence of malaria amongst MMPs when compared with a population of similar socio-economic and demographic profile. In addition, MMPs are usually poorly connected to routine public health interventions and surveillance systems and therefore represent a vulnerable group with regards to the malaria control.

It has been documented that the movement of populations in malaria-endemic areas poses a major threat to the spread of artemisinin resistance along the Cambodia–Thailand border (6). It is not only the drive for equity of health care that makes mobile and migrant people a priority population, but also their recognised role in the spread of Artemisinin resistance. In the World Health Organisation’s Global Plan for Artemisinin Resistance Containment (GPARC) operational research into MMPs is highlighted as a vital part of containing and preventing resistance.(7) According to the strategy document, building scalable models to reach MMPs should be the highest priority for research; others include behavioural and social research, tracking treatment failures, and Active Case Detection (ACD).

The influx of migrants from other locations in Cambodia towards malaria zones implies complex issues for the NMCP. Mobility patterns in terms of time and space need to be taken into consideration insofar such information is still poor. This strategy explores the quantitative and qualitative aspects of these mobile populations. It also suggests relevant interventions packages according to the characterisation of MMP populations such as their movement from the original location to one or different new places and their returning back to previous living place in case it happens.

This strategy for MMPs is designed to reflect the objectives set out in the National Strategic Plan for the Elimination of Malaria (2011-2025), but tailored specifically for the MMP population. The National Strategic Plan is summarised in the next section.

### **National Strategic Plan 2011-2025 for elimination of malaria in the Kingdom of Cambodia**

#### ***Vision***

The long-term vision of the Royal Government of Cambodia is of a Cambodia totally free from the burden of malaria.

By 2015, the malaria-specific Millennium Development Goal (MDG) is achieved, and malaria is no longer a major cause of mortality and no longer a barrier to social and economic development and growth anywhere in the country. All citizens will have universal access to malaria prevention (ITNs) as well as treatment with Artemisinin-based Combination Therapy (ACT).

Beyond 2015, the Royal Government of Cambodia and its partners sustain their political and financial commitment to malaria control efforts and ensure partial elimination of malaria by 2020 and total elimination by 2025.

#### ***Mission***

The Royal Government's mission is to work together with all relevant partners and the communities themselves to enable sustained delivery and use of the most effective prevention and treatment for those affected most by malaria by mobilizing all the required resources and ensuring compliance with all national standards and guidelines for key malaria interventions.

Key elements of the mission include:

- Prevention of malaria transmission through the use of insecticide treated nets
- Provision of comprehensive services for early diagnosis and effective treatment which are free of charge in public health facilities
- Halting the spread of anti-malaria drug resistant parasites
- Controlling the sale of fake or sub-standard drugs in the markets through close cooperation with key players in the private sector
- Conducting Mass Drug Administration (MDA) in selected parts of the country
- Developing and implementing operational and technical plans for malaria elimination through coordination with development and implementing partners as well as the adoption of an inter-sectoral approach both within and outside the country.

## Goals

- i- Eliminate artemisinin resistant *Plasmodium falciparum* malaria parasites by 2015
- ii- Eliminate malaria with an initial focus on *Plasmodium falciparum* and ensure zero deaths from malaria by 2020
- iii- Eliminate all forms of malaria in the Kingdom of Cambodia by 2025.

## Objectives

Box 1: Objectives of the National Strategic Plan 2011-2025

### **“Short, Medium and Long-term Goals of the Cambodia Malaria Elimination Strategy” (8)**

**Short-term (by 2015):** To move towards pre-elimination of malaria across Cambodia, bringing level of transmission below 2 cases per 1,000 population for most parts, with special efforts to contain artemisinin resistant *Plasmodium falciparum* malaria.

**Medium-term (by 2020):** To move towards elimination of malaria across Cambodia with an initial focus on *P.falciparum* malaria and ensure zero deaths from malaria.

**Long-term (by 2025):** To achieve phased elimination of all forms of malaria in Cambodia.

## THE MMP STRATEGY

### **Strategic approach and core principles**

In order to support the National Centre for Parasitology, Entomology and Malaria Control (CNM) to ensure successful accomplishment the goals of the National Malaria Elimination Strategy 2025, the aim of this strategy document, as part of the MMP working group, is to create a framework for collaboration and exchange of information related to how the national programme can be adapted and better targeted to the hard-to reach populations and to the specific MMP approaches and national strategies.

This MMP strategy is determined by the main objectives of the integral migrant strategy, as well as by the existing at present national goals in the field of malaria elimination among MMPs regarding both migrant's population temporal and spatial patterns and malaria elimination through prevention, control diagnosis, treatment and operational research. The aim of the this strategy, the results obtained and respectively the expected outcomes are within the framework of the goals and programs of The National Elimination Strategy for better prevention, control and surveillance and to promote operational research.

The MMP strategy to address migrant and mobile populations for malaria elimination in Cambodia aims to formulate effective and integrated national migration malaria control, diagnosis, treatment and operational research mechanisms. This document is underpinned by the understanding of migration both as a necessary resource for the national economy and as a potential threat to malaria elimination efforts. At times of demographic and economic crisis migration is a resource that can contribute to the economic growth and the security of the Cambodian people provided that efficient and effective migration and malaria mechanisms are put in place.

## **MMP Strategy Goal and objectives <sup>1</sup>**

The MMP strategy aims to support the goals of the National Malaria Elimination Strategy 2025 through adapting and better targeting interventions to these hard-to reach populations. The Royal Cambodian Government's National Strategic Plan for the Elimination of Malaria in Cambodia 2011 – 2025 is in line with global and regional strategies, specifically identifying MMPs as a priority intervention group to halt resistance and reduce the burden of malaria in Cambodia. In order to reach their short-term strategic goal of pre-elimination status by 2015, the government and partner will aim “to ensure universal access to early malaria diagnosis and treatment services with an emphasis on detection of all malaria cases (including among mobile/migrant populations) (8)”. There are a number of activities outlined in policy to in order to achieve this goal, such as the provision of free or loaned LLINs, EDAT services offered through MMWs and BCC campaigns. In particular to:

4.1.9. Develop and assess effectiveness of interventions with mobile/migrants population movement and behaviour in collaboration with relevant partners.(9)

The National Center for Parasitology, Entomology and Malaria Control (CNM) and its partners have made an attempt to determine the most effective strategies to reach MMPs, to identify knowledge gaps, and harmonise their activities in a combined effort to achieve stated national, regional and global goals.

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<sup>1</sup> *Aligned and adapted from National Strategy to MMPs*

## Strategic objectives within strategic areas

### Prevention

1. To ensure universal access to preventive measures and specifically prevents transmission of artemisinin resistant malaria parasites among target populations (including mobile/migrant populations) by mosquito control, personal protection and environmental manipulation.

### Early Diagnosis and Treatment (EDAT)

2. To ensure universal access to early malaria diagnosis and treatment services with an emphasis on detection of all malaria cases (including among mobile/migrant populations) and ensure effective treatment including clearance of *P. falciparum* gametocytes and dormant liver stage of *P. vivax*.

### Behaviour Change Communication (BCC)

3. To ensure universal community awareness and behaviour change among the population at risk and support the containment of artemisinin resistant parasites and eliminate all forms of malaria through comprehensive behaviour change communication (BCC), community mobilization, and advocacy (including mobile/migrant populations).

### Research

4. To halt drug pressure for selection of artemisinin resistant malaria parasites by improving access to appropriate treatment and preventing use of monotherapies and substandard drugs in both public and private sectors (including mobile/migrant populations).

### Surveillance/Coordination/management

5. To provide effective management (including information systems and surveillance) and coordination to enable rapid and high quality implementation of the elimination strategy (including mobile/migrant populations).

## STRATEGIC ANALYSIS

### Background and Methodology

In South East Asia, the malaria ecosystem and related transmission are closely related to forested areas (10). Therefore, the intensity, duration and frequency of the interaction and exposure with forest condition determine the malaria incidence in a population. It is based on this assumption that the National Malaria Strategy has been developed since the late 1990's. The stratification of villages "at risk" of malaria which has been used to, target malaria interventions, including impregnated bed net distribution and Village Malaria Workers (VMWs), has been based on the distance of villages from the forest. During this time, Cambodia has gone through major political, economic and environmental changes.

The political stability and peace has allowed for development of road infrastructures, improving access to those areas, leading to land development projects, mainly in the agriculture sector. This has led to increased interaction between local and migrant population with the forests. This trend has increased since the mid 2000's and has led to changes in malaria epidemiology as documented in the Cambodia Malaria Survey 2007 and 2010, where forest goers were shown to forest goers had significantly higher risk than non-forest-goers. Increased movement of population from non-malaria endemic areas to malaria endemic areas in the west and the north-east of the country have created new challenges for the malaria control program, both in terms of strategy and implementation.

This population at-risk includes a many different sub-groups including seasonal workers, small groups of forest-goers and military. Each group has different characteristics and requires different approaches to prevention and control. The main focus should be on the interaction/exposure of MMP with the forest, i.e. the activities leading to interaction/exposure to forested areas (see table below).

Following initial meetings and discussion, it was agreed that in order to facilitate strategic planning, an operational definition of different types of Mobile and Migrant Population would be useful. To this end, a "population movement framework" has been developed and is described below.

### ***Approach to the development of the Population movement framework and MMP profiles***

To support the development of the strategy, a population movement framework in the context of malaria in Cambodia has been developed based on:

- Review of published literature and unpublished documents focusing on the interaction between population movement and malaria. (to develop)
- Consultation with stakeholders in Cambodia, involved in malaria control at different levels: National and provincial malaria program managers and implementers, NGOs involved in malaria programs at provincial level and international and research institutions. (to develop)
- Definition of population movement in Cambodia
- Development of a malaria vulnerability index for each-sub-population
- Development of a “profile” for each sub-population

- Review of the literature on MMP and malaria and on population framework

Existing population movement frameworks:

(i) Published literature (tables and charts in annex): Prothero (1977, 2002), Stoddard (2009), Pindolia (2012)

- The 3 frameworks presented are based on population movement in space and time
- Population movement and population activities are represented along space and time axis
- They address the effects of population movement on the circulation, introduction, reintroduction and spread (including resistance) of the parasite at various spatial levels

(ii) Grey literature on MMP classification in Cambodia and Thailand (tables in annex): WHO, Networks project, CNM Guide on LLIN distribution strategy for MMP

The classifications are based on:

- MMP profiles by activities
- Link or affiliation
- Outreach possibilities
- Possible interventions
- Level of risk and potential malaria outcomes

#### Definitions of population movement in Cambodia (local, mobile, migrants)

Proposed definitions of population movement in Cambodia: Local, mobile or migrant population

Based on (Ref, census, IOM) we define the following:

- Local population: permanent resident in the area for more than 1 year
- Mobile population: Resident in the area for less than 6 months
- Migrant: Resident in the area for more than 6 months and less than 1 year

## MALARIA VULNERABILITY INDEX

For each sub-population we propose the use of the malaria vulnerability index. We define here malaria vulnerability as a result of the combination of individual and household features increasing vulnerability to malaria infection (probability for an individual to get infected by malaria).

A semi quantitative index was developed based on scoring of the following variables:

- knowledge of malaria transmission-prevention-diagnosis and treatment
- ownership and use of prevention measures (i.e. LLIN/ITN)
- housing type and conditions
- immune status

The source of information to attribute a value score to the variables for each population type was based on a mix of quantitative results from CMS 2010 (11) and qualitative studies undertaken in Cambodia recently (12). Further review and adjustment/validation through expert opinion and future research results will be needed to ensure proper updating of this index.

Table 1. Malaria vulnerability index

	Mobile population	Migrant population	Local population
<b>Definition</b>	Resident for less than 6 months	Permanent resident for more than 6 months and less than 1 year	Permanent resident for more than 1 year
<b>Main point of contact</b>	Farm, plantation, company, outreach/mobile vendors/providers	Village/house	Village/house
<b>Knowledge malaria transmission-prevention-Dx-Rx</b>	Low	Low to medium	Medium to high
<b>Knowledge Score</b>	3	2	1
<b>ITN ownership/use</b>	Low	Medium	Medium to high
<b>ITN Score</b>	3	2	1
<b>Housing type</b>	None, tents, huts, barracks	Bamboo, wooden or concrete house	Bamboo, wooden or concrete house
<b>Housing conditions</b>	Low	Low to medium	Low to medium

<b>Housing Score</b>	3	2	2
<b>Immune status</b>	None or low	None or low	Low to medium
<b>Immunity Score</b>	3	3	2
<b>Malaria vulnerability score</b>	12	9	6

## POPULATION MOVEMENT FRAMEWORK IN CAMBODIA

Table 2. Population Movement Framework

Population movement framework in Cambodia		time			
		Local population	Mobile population		Migrant population migration
		daily no overnight	circulation <6 months		>6 months irregular      long term
			periodic overnight to 1 week	seasonal 1 week to 6 months	
space					
<b>short range</b> same commune-malaria area  <10kms	rural village to foot hills	farming-plantation	farming-plantation	farming-plantation	new settlement, trading, farming
	rural village to upland forest	chamkar, gathering, fishing, hunting	chamkar, gathering, fishing, hunting	chamkar, gathering, fishing, hunting	new settlement, trading, farming
<b>medium range</b> same province other commune/district-non malaria area  10-100kms	rural village to foot hills		farming-plantation	farming-plantation	new settlement, trading, farming
	rural village to upland forest			dam/road construction, mining	dam/road construction, mining
			hunting, fishing, logging	hunting, logging, fishing, mining	hunting, logging, fishing
<b>long range</b> other province  >100kms	rural village to foot hills		visiting relatives, tourism	farming-plantation	new settlement, trading, farming
				dam/road construction, mining	dam/road construction, mining
			hunting, fishing, logging	hunting, logging, fishing, mining	hunting, logging, fishing
	rural village to upland forest		military, police, border units patrols	military, police, border units patrols	hunting, logging, fishing
			visiting relatives, tourism		

## MMP STRATEGY DEFINITION

Table 3: MMP Strategy Definitions

Forest malaria	Malaria ecosystem and transmission is closely related to forested areas in SEA. <sup>2</sup>
Related activities of population	Population movement in relation to malaria, the main focus should be on the interaction/exposure of MMP with the forest.
<b>MMP definitions</b>	
Local population <sup>3</sup>	Permanent resident in the area for more than 1 year
Mobile population	Resident in the area for less than 6 months
Migrant population	Resident in the area for more than 6 months and less than 1 year
Visitors (from abroad to the country)	Person admitted for short stays for purposes of leisure, recreation, holidays; visits to friends or relatives; business or professional activities. Visitors include excursionists, tourists and business travellers. tourists, visiting relatives who might spend 1 or 2 nights in or near the forest. Examples: ecotourism, family event
Seasonal workers	agricultural activities occurring during planting season (end of dry season) and harvesting season (end of rainy season), usually in foothills/plains/valleys. Examples: farming/chamkar, rubber, cassava plantations
Construction/mine workers	activities related to infrastructure construction or mining in forested areas, usually in upland forest/hills/valleys. Examples: dam or road construction, gold or gem mines
Forest workers	activities in heavily forested and remote areas in small mobile groups, usually in upland forest/hills. Examples: forest products gathering, hunting, logging, fishing
Security personnel	activities related to patrolling in forested border areas.

<sup>2</sup> Ref Kondrashin

<sup>3</sup> Ref, census, IOM

## MMP PROFILES DEFINITION

Based on the distribution in space and time of those activities conducted by MMP we grouped and defined MMP by profile corresponding to the main activities and working conditions. The table below summarises the key MMP profiles:

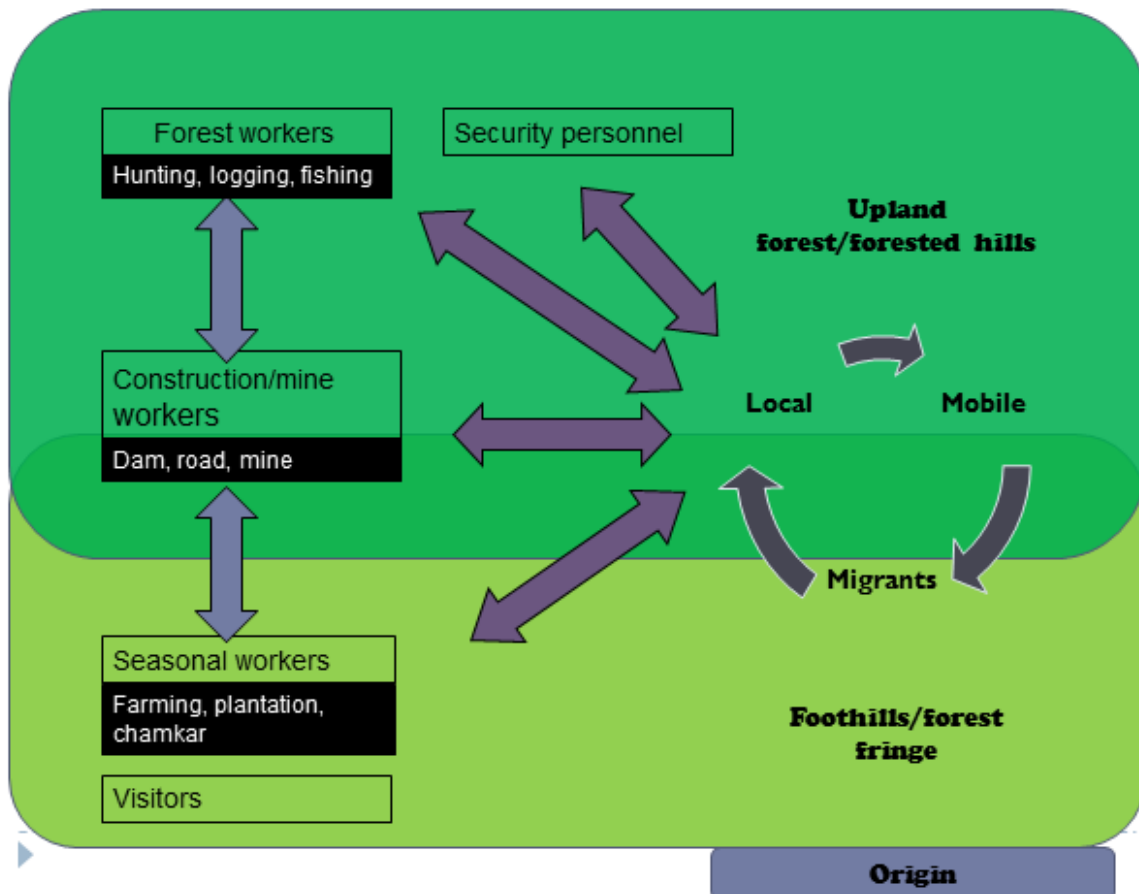
Table 4. MMP profiles definition

Movement type	Main activities	Population type	MMP profile
to foot hills	farming-plantation	Local, Mobile, Migrant	Seasonal workers
	visiting relatives, tourism	Mobile	Visitors
to upland forest	hunting, gathering, logging, hunting	Local, Mobile, Migrant	Forest workers
	dam/road construction, mining	Mobile, Migrant	Construction mine workers
	military, police, border patrols, units	Mobile, Migrant	Security personnel

## MMP MALARIA ECOSYSTEM

The below figure reflects the movement of the population in Cambodia. Population movement can be highly dynamic and interactions between upland forest/forested fringes and foothills/forest fringes can occur cyclically. A local person can become a migrant and a migrant can become a mobile within unpredictable periods of time.

Figure 1: MMP Malaria Ecosystem



## FOREST/MALARIA EXPOSURE INDEX

We defined forest/malaria exposure as the result of the combination of individual activities and environmental features in relation to the forest.

A semi quantitative index was developed based on scoring of the following variables:

- Work area in relation to the forest and forest type
- Duration of stay in the forest
- Housing type and conditions
- Use of prevention measures

The source of information to attribute a value score to the variables for each population type is based on a mix of quantitative results from CMS 2010 and qualitative studies undertaken in Cambodia recently. It would need further review and adjustment/validation through expert opinion and future research results (see table below).

Table 5. Forest/malaria exposure index

	Forest Workers	Construction Workers	Security Personnel	Seasonal Workers	Visitors
	FW	CW	SP	SW	V
<b>Main activities</b>	Hunting, fishing, logging, non-timber forest products	Dam or road construction, mining	Patrolling	Farming, plantation, chamkar	
<b>Population type</b>	Local, Mobile, Migrant	Mobile, Migrant	Mobile, Migrant	Local, Mobile, Migrant	Mobile
<b>Work area</b>	Forest, hills	Forest, hills	Border forest	Foot hills, plains, valleys	
<b>Forest location Score</b>	3	3	3	2	2
<b>Duration of stay in forest</b>	1 to 4 weeks	1 to 6 months	weeks to months?	1 to 4 weeks	1 week
<b>Forest stay Score</b>	2	3	3	2	1
<b>Housing type</b>	Tents, none	Huts, barracks, tents	Huts, barracks, tents	Tents, huts	Wooden or concrete house
<b>Housing type Score</b>	3	2	2	2	1
<b>Prevention measures use</b>	Very low	Low	Low to medium	Low	Medium
<b>Prevention measures Score</b>	3	2	1	2	1
<b>Forest/malaria exposure score</b>	11	10	9	8	5

## ACCESS/OUTREACH INDEX

We defined access/outreach here as the possibility to access to MMP profiles as well as the possibility for MMP to access health services and providers. It is defined as the result of the combination of work area and working conditions (including link/affiliation).

A semi quantitative index has been developed based on scoring of the following variables:

- Access to and from work area and location
- Link/affiliation
- Access/outreach to main point of contact

The source of information to attribute a value score to the variables for each population type is based on a mix of quantitative results from CMS 2010 and qualitative studies undertaken in Cambodia recently. It would need further review and adjustment/validation through expert opinion and future research results (see table below).

Table 6. Access/outreach index

	Forest Workers	Construction Workers	Security Personnel	Seasonal Workers	Visitors
	FW	CW	SP	SW	V
<b>Main activities</b>	Hunting, fishing, logging, non-timber forest products	Dam or road construction, mining	Patrolling	Farming, plantation, chamkar	
<b>Population type</b>	Local, Mobile, Migrant	Mobile, Migrant	Mobile, Migrant	Local, Mobile, Migrant	Mobile
<b>Work area</b>	Forest, hills	Forest, hills	Border forest	Foot hills, plains, valleys	
<b>Access work area</b>	Low	Low to medium	Low	Medium	
<b>Access work area score</b>	3	3	3	2	
<b>Work location</b>	Mobile	Fixed	Semi-mobile	Fixed	
<b>Access work location</b>	Low	Low	Low	Medium	

	Forest Workers	Construction Workers	Security Personnel	Seasonal Workers	Visitors
Access work location score	3	3	3	2	
Link/affiliation	None or village for local population	Company	Government	Farm owner/company	None
Main point of contact	None or village for local population	Company	Military base	Farm owner/company	Guest houses/hotels?
Access/outreach point of contact	Low	Low	Medium	Medium	Medium
Access/outreach point of contact score	3	3	2	2	2
Access/outreach score	9	9	8	6	2

## MMP MALARIA RISK SCORES

In order to obtain a “MMP malaria risk index” we combined the three indices in the below table:

1. Forest/malaria exposure index
2. Access outreach index
3. Malaria vulnerability index

The below scores based on the combination of indexes is mainly illustrative of the situation and can be refined and adapted to specific contexts to adjust local strategies.

Table 7: MMP Malaria risk score

				Malaria vulnerability						
				MMP definition						
				Mobile population	Migrant population	Local population				
			Scores	12	9	6	Scores			
Forest/malaria exposure	MMP types	Forest Workers	11	32	29	26	9	Forest Workers	MMP types	Access/outreach
		Construction Workers	10	31	28	25	9	Construction Workers		
		Security Personnel	9	29	26	23	8	Security Personnel		
		Seasonal Workers	8	26	23	20	6	Seasonal Workers		
		Visitors	5	19	16	13	2	Visitors		

The above combination of indexes allows visualizing that mobile population among forest and construction workers are the most at risk for malaria (red cells). Forest and construction workers and the mobile population among them are generally more at risk for malaria than other profiles and sub-population of MMP. It is envisaged that the index could be used as a guide for better targeting of most at risk sub-population and profiles and can be used operationally to plan and target interventions.

## INTERVENTIONS PACKAGES PER MMP PROFILES

Table 8. Summary of MMP profiles

	Variables	Forest Workers	Construction Workers	Security Personnel	Seasonal Workers	Visitors
Profile		FW	CW	SP	SW	T
	Main activities	Hunting, fishing, logging, non-timber forest products	Dam or road construction, mining	Patrolling	Farming, plantation, chamkar	
	Population type	Local, Mobile, Migrant	Mobile, Migrant	Mobile, Migrant	Local, Mobile, Migrant	Mobile
Forest/malaria exposure	Location from forest	In forest	In forest/forest fringe	In forest	Forest fringe	Forest fringe
	Duration of stay in forest	1 to 4 weeks	1 to 6 months	weeks to months?	1 to 4 weeks	1 week
	Forest exposure	High	Medium to high	High	Low to medium	Low
	Housing type	Tents, none	Huts, barracks, tents	Huts, barracks, tents	Tents, huts	Wooden or concrete house
Working conditions /Access /Outreach	Work area	Forest, hills	Forest, hills	Border forest	Foot hills, plains, valleys	
	Work location	Mobile	Fixed	Semi-mobile	Fixed	
	Link/affiliation	None or village for local population	Company	Government	Farm owner/company	None
	Main point of contact	None or village for local population	Company	Military base	Farm owner/company	Guest houses/hotels

Intervention packages have been broken down per strategic areas (prevention, diagnosis and treatment, surveillance)

## DELIVERY CHANNELS/MECHANISMS PER MMP TYPES

Based on consultation with key stakeholders, the following table provides some examples of possible interventions and delivery channels/mechanisms for MMP profiles relevant to the National Malaria Programme

Table 8. Interventions and delivery channels

		FOREST WORKERS	CONSTRUCTION WORKERS	SEASONAL WORKERS
	Delivery mechanisms	Retail sales (subsidised?); voucher system	Loaning scheme; retail sale; voucher system	Loaning scheme; retail sale; voucher system
PREVENTION	HE/BCC	Mass media; taxi drivers	Mass media; Interpersonal through MMW; taxi drivers	Mass media; Interpersonal through MMW; taxi drivers
	LLIN/LLIHN, ODP	Forest package	Forest package; LLIN/LLIHN loaning	Forest package; LLIN/LLIHN loaning
EDAT	EDAT Public	Mobile clinics	MMW; mobile clinics	MMW/PMW; mobile clinics
	EDAT Private/PPM	Stand by treatment; mobile health providers	Company health workers	Company health workers
SURVEILLANCE	MMP surveillance	Local authorities	Local authorities; company	Local authorities; plantation owner/manager
	Malaria surveillance	mHealth; private/PPM	mHealth; private/PPM; MMW	mHealth; private/PPM; MMW

## **MMP IMPLEMENTATION FRAMEWORK**

### **Main objective:**

To develop an integrated approach to reach MMP exposed to malaria, with prevention, diagnosis and treatment services, by involving non-health sector stakeholders from provincial to community level.

### **Process:**

Different steps are outlined below to achieve the objective. Those steps should be considered indicative and each should be adapted to the local situation.

### **Overall coordination (at provincial level as an example, this can be applied at OD/district or commune/HC level)**

PHD/PMU and/or Provincial Malaria Task force lead strategy, coordinate, provide technical guidance based on National Strategy. The steps are not presented in a specific order and could be implemented in parallel.

- **Identify areas of land development**

Land development in forested areas has been identified as one of the factors for attracting mobile and migrant population in malaria risk areas. Therefore, collecting information related to land development in forested areas in its various forms (agriculture-plantations, mining, dams, community natural resources use) is crucial to target at risk MMP for malaria.

Relevant information to be collected and line ministries/institutions related to:

- Social and economic land concessions (MAFF, MOI)
- Forest cover (MAFF, FAO)
- Plantations (MAFF, MLMUP)
- Mines (MIME)

Contact and linkages, both formal and informal, with relevant government departments, international institutions and private entities involved with land development should be established and developed.

Information should be initially collected, when available, through contact with relevant ministries, institutions, NGOs in various formats (website, web-based, reports, maps, database).

In a second step, see below, those information should be cross-checked with field/local situation and data for update and accuracy.

- **Develop an integrated multi-sectoral provincial profile highlighting information and data relevant to malaria and mobile population from existing sources**

Based on data collected above a provincial profile combining those information can be developed for the following categories/topics and sources:

- Demography and migration (MOP/NIS)
- Epidemiological data and maps (CNM, PMU)
- Health services data and maps (MoH, HIS)
- Data books: provincial, district and commune level (NCDD/MOI)
- Land cover, land resources data (relevant Ministries-MAFF, MIME, MLMUP- and NGOs)
- Land use data: land concessions, plantations, mines (MAFF, MIME, MLMUP- and NGOs)

This profile can be used as a platform to develop the implementation strategy, target areas for interventions, identify relevant partners and stakeholders and their respective responsibilities.

- **Conduct a consultative inter-sectoral integrated stakeholder workshop on malaria and MMP with relevant representatives from:**
  - RGC at provincial level (with relevant ministries representatives identified above)
  - International and national NGOs
  - Private sector (private companies involved in land development, private health providers)

CNM and most partners in this strategy have established and strengthened their Monitoring and Evaluation System for the implementation and operational research on malaria which could be used to monitor and evaluate the progress made in implementing the MMP Strategy. The key features of the national malaria M&E system and partners could include the following.

- Data collection through a variety of methodologies. Routine monitoring, Baseline, Mid-term and End-line quantitative and qualitative surveys (Cambodia Malaria Surveys).
- The results of all evaluations from partners should be shared with stakeholders, at provincial and national level in Cambodia and with donors, NGOs and important academic and research organizations.
- Most importantly, lessons learned from implementation should guide best practice for future MMP interventions in order to ensure the goal and objectives of the elimination strategy 2025.
- Ongoing monitoring of MMP activities conducted by CNM and partners should take place including rapid as well as comprehensive assessments
- Supervision visits should be a key component of the M&E framework of CNM staff and Director/Vice Directors to the provinces and referral hospitals, provincial staff to the ODs and Health Centres and the OD staff to Health Centres and Health Posts. This will reveal the qualitative impact of the MMP interventions and ensure that feedback to peripheral levels is provided promptly and feedback received is acted upon expeditiously.
- MMP data collection should be incorporated into the Cambodia Malaria Survey as well as the HIS, PSMIS and Community surveillance data (generated through the VMW project) in order to determine impact on malaria prevalence in the different provinces. Especially data pertaining to MMP Malaria Incidence Rate, MMP Malaria Mortality Rate and MMP Malaria Case Fatality rate.
- CNM should function as the focal agency for compilation of data on behalf of all the partners implementing MMP interventions on some of the identified common indicators. Reports will be submitted to CNM on a quarterly and half-yearly basis, for national monitoring of common interventions and activities.

The table below depicts the core indicators and their targets which will be incorporated into the M&E framework that will be used to monitor and evaluate the MMP strategy in Cambodia.

## INDICATOR MATRIX FOR THE MMP STRATEGY

Table 8. MMP Strategy Outcome Indicators

Indicator	Base-line <sup>4</sup>	Comments															
	2013	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025			
Malaria mortality rate: Annual probable and confirmed malaria deaths per 100,000 mid-year MMP population reported in public health facilities	NA								0.00	0.00	0.00	0.00	0.00	0.00	The aim is to reach 0 mortality by 2020		
Annual Malaria Incidence among MMPs	NA													0.00	The aim is to reach 0 incidence by 2025		
Annual confirmed malaria cases per 1000 mid-year MMP population reported in public health facilities.	NA													0.00	The aim is to reach 0 incidence by 2025		
# of ODs (out of a total of 43 endemic districts) that reach pre-elimination status (<5% side/RDT positivity rate or <1/1000 incidence rate of confirmed malaria, all species, among the midyear OD MMP population) at public health facilities	NA								43 100%	43 100%	43 100%	43 100%	43 100%	43 100%	The aim is to reach the pre-elimination status in a phased manner to reach all the 43 endemic ODs by 2020.		

<sup>4</sup> According to data to be collected in MMP section in CMS 2013

Indicator	Base-line <sup>4</sup>	Comments															
	2013	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025			
# of ODs (out of a total of 43 endemic districts) that reach elimination status among MMPs (0 incidence rate of confirmed malaria) at public health facilities	NA	0 0%	0 0%	7 16%	9 21%	12 27%	14 32%	16 38%	17 40%	24 56%	31 72%	38 88%	41 95%	43 100%	The aim is to reduce the malaria burden to an incidence of 0 confirmed cases per 1,000 in a phased manner to reach all the 43 endemic ODs by 2025.		
Proportion of Falciparum, Vivax and other types of Malaria among confirmed MMP malaria cases treated in public health facilities	NA													PF= 0%  PV= 0%  Mix= 0%	The aim is to reduce the Pf malaria burden 0% by 2020 and Pv burden to 0% by 2025.		
Percentage of MMP households/farms at risk of malaria living in the targeted villages with at least one insecticide- treated net (LLIN/ conventional treated net) and/or sprayed by IRS in the last 12 months	NA		95%		95%		95%		95%		95%		95%				

Indicator	Base-line <sup>4</sup>	Comments													
	2013	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Percentage of MMP population at risk of malaria living in the targeted villages who slept under an insecticide-treated net (LLIHN/ LLIN/ conventional treated net) during the previous night	NA		85%		90%		95%		95%		95%		95%		
% of MMPs in the target areas with fever in the last two weeks who received antimalaria treatment according to national policy within 24 hrs of the onset of fever.	NA		80%		85%		90%		95%		95%		95%		

## Conclusions

*In view of this strategy there is a need to*

- Present the issue of malaria, MMP and drug resistance to non-health stakeholders
- Share information related to MMPs and its relevance for non-health stakeholders, including identifying additional information needed.
- Develop a multi-sectoral strategy involving all relevant stakeholders in the area of:
  - Management and coordination at every level
  - Surveillance and data collection (towards a multi-sectoral information system)
  - Prevention
  - Diagnosis and treatment
- Define the MMP strategy as a two-year implementation strategy
- The integration of the Provincial Malaria Elimination Committee meeting into the strategy to obtain information at provincial and OD levels.
- Most NGOs target seasonal workers BUT information lacking on how to target construction workers and forest workers.
- Need to identify synergies, overlaps and gaps among stakeholders, including additional research, field assessment and survey needs.
- Need to do a mapping exercise depicting where organisations are working with MMPs
- Recommend to include of religious leaders into the strategy.
- Standardise MMP definitions among organisations working with MMPs
- Need to get approximate numbers of different types of MMPs at PHD and OD levels.
- The strategy is only a good guide for planning purposes and offers a clear perspective on the many dimensions on MMP profiles
- Identify how to target construction workers and forest workers (most NGOs target seasonal workers)

## BIBLIOGRAPHY

1. MoH. National Centre for Parasitology, Entomology and Malaria Control: Annual Report for 2010. Kingdom of Cambodia. April, 2011.
2. Malaria Consotium. Report of the Cambodia Containment Survey 2009 and 2010. 2009-2010.
3. IOM. Migration in Cambodia: Internal vs. External Flows. Phnom Penh2008.
4. Maltoni B. The invisible flow. Rural to rural migration in. Cambodia. Phnom Penh: IOM2006.
5. Frédéric Bourdier CBTSP. Malaria and population dynamics in Cambodia. Phnom Penh: IRD.
6. Khamsiriwatchara A, Wangroongsarb P, Thwing J, Eliades J, Satimai W, Delacollette C, et al. Respondent-driven sampling on the Thailand-Cambodia border. I. Can malaria cases be contained in mobile migrant workers? Malar J. 2011;10:120.
7. World Health Organisation. Global Plan for Artemisinin Resistance Containment (GPARC). Geneva 2011.
8. CNM. National Strategic Plan 2011-2025 for elimination of malaria in the Kingdom of Cambodia. Phnom Penh2011.
9. The Royal Government of Cambodia. National Strategic Plan For Elimination of Malaria in Cambodia 2011-2025. Phnom Penh2011.
10. Forest Malaria in Southeast Asia: Proceedings of an Informal Consultative Meeting WHO/MRC, 18-20 Febuary, 1991
11. CNM-MC Cambodia Malaria Survey 2010 (CMS 2010). Phnom Penh 2010
12. CNM-LSHTM-MC Workshop on Research Relateing to mobile and Migrant Populations and Access to Diagnosis and Treatment, Phnom Penh 2012.
13. Stoddard ST, Morrison AC, Vazquez-Prokopec GM, Paz Soldan V, et al. The Role of Human Movement in the Transmission of Vector-Borne Pathogens. PLoS Negl Trop Dis 2009 3(7): e481 2009
14. Deepa K Pindolia, Andres J Garcia, Amy Wesolowski, David L Smith, Caroline O Buckee, Abdisalan M Noor,Robert W Snow and Andrew J Tatem Malaria Journal 2012, 11:205

## ANNEXES

### I. Previous work on unpublished MMP frameworks in Cambodia

#### Sub-Categorisation of Migrant and Mobile Population (Dr Steve Bjorge, WHO)

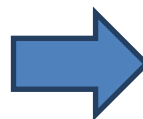
Mobile Group	Group profile	Possibility of Outreach	Possible Interventions
Stable / linked to local village	Visiting forest for days/weeks for hunting, fishing, collecting valuable products	Outreach very possible because home address is known	<ul style="list-style-type: none"> <li>• LLIHN distribution to family</li> <li>• Village Malaria Workers</li> <li>• Repellents?</li> <li>• ITM?</li> </ul>
Semi-stable / linked to company	Working in risk area for a company; may be from other province	Outreach possible because living at work site with company; examples: hydroelectric, food processing, rubber plantation	<ul style="list-style-type: none"> <li>• LLIN / LLIHN distribution by company</li> <li>• Mobile Malaria Workers</li> <li>• Repellents?</li> <li>• ITM?</li> </ul>
Seasonal aggregation of agricultural labor / linked to land owner (malaria risk depends on terrain and	Working for landowner to plant or harvest agriculture products (2-4 months); often from other provinces; often non-immune	Outreach possible through the landowner who maintains a supply of LLIN to be loaned to workers	<ul style="list-style-type: none"> <li>• Loan scheme of LLIN by landowner who keeps nets to provide coverage to temporary workers.</li> <li>• Mobile Malaria Workers to provide</li> </ul>

environment)			diagnosis and treatment
Security personnel / linked to govt	<p>Military, police, border guards who patrol in forest or other risk areas</p> <p>Families who follow soldier-husbands to new forest-risk areas</p>	Outreach possible through organizational structure, but has proved difficult to monitor due to lack of open access	<ul style="list-style-type: none"> <li>• LLIN</li> <li>• LLIHN</li> <li>• ITM – uniforms</li> <li>• Topical repellents</li> <li>• Chemoprophylaxis</li> <li>• Malaria Treatment Posts</li> </ul>
Highly mobile / unlinked	Opportunistic work in remote locations, come from other provinces, form loose groups living in camps; formerly gem miners, now gold miners, wood cutters, stump miners	Extremely difficult to reach out. No fixed address, no links to exploit	<ul style="list-style-type: none"> <li>• MMVs or Mobile Clinics</li> <li>• LLIHN?</li> <li>• ITM?</li> <li>• Repellents?</li> </ul>

## NetWorks Project Vector Control Assessment Report in the GMS


### Employer Affiliated Mobile Target Groups-7 groups identified

MOBILE TARGET GROUP	GROUP PROFILE
<b>1. AFFILIATED TO EMPLOYER</b>	
<b>i. “Semi-mobile Employee”</b> Affiliated with company employer	<p>Working in endemic areas for an employer e.g.</p> <ul style="list-style-type: none"> <li>- hydroelectric dams</li> <li>- food processing (cassava)</li> <li>- rubber/palm oil plantation (mature harvesting)</li> </ul> <p>Often from neighbouring province; Less immune to malaria; No close relationship with employer</p>
<b>ii. “Seasonal Farm Worker”</b> Affiliated with landowner	<p>Planting or harvesting agricultural products (2-4 months); Often from other provinces; Often non-immune; Mutually beneficial relationships formed with farm owners, maintain contact and repeat service each season</p>



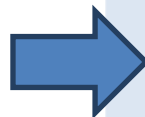
OUTREACH POSSIBILITIES	PUBLIC SECTOR INTERVENTIONS	CIVIL SOCIETY INTERVENTIONS	PRIVATE SECTOR INTERVENTIONS
<b>Outreach possible - address at employer/farm location is known</b>	<p>EXISTING:</p> <p>Mobile Malaria Workers BCC &amp; Dipping campaigns</p> <p>POTENTIAL: Training for MMWs</p> <p>BCC focus on nets &amp; treatment</p>	<p>EXISTING:</p> <p>Some mapping of farms in Cambodia Lending Scheme &amp; Taxi Scheme in Cambodia</p> <p>POTENTIAL: KAP studies of target groups.</p> <p>Mapping of employers/farms/plantations Increase BCC</p> <p>Scale-up LLIN lending schemes</p> <p>Trials of new products e.g. repellents, treated clothing</p>	<p>EXISTING:</p> <p>Retail sale of nets and hammock nets Farm Owners participation in Lending Scheme</p> <p>POTENTIAL: Advocacy to enlist employers to <u>purchase LLIN, LLIHN</u> at bulk rates and distribute at company/farm</p> <p>LLITKs in retail market</p>

**Govt. Affiliated Mobile Target Groups--7 groups identified**

MOBILE TARGET GROUP	GROUP PROFILE	OUTREACH POSSIBILITIES	PUBLIC SECTOR INTERVENTIONS	CIVIL SOCIETY INTERVENTIONS	PRIVATE SECTOR INTERVENTIONS
2. AFFILIATED WITH GOVT.					
iii. "Security Personnel" Affiliated with government	Military, police, border guards who patrol in forest or other risk areas. & Families who follow partners into forest-risk areas ('Camp-followers')	 <p><b>Outreach possible through government structures. Difficult to monitor due to lack of open access</b></p>	<p>EXISTING: Some activities (unknown) – distribution of LLINs/LLIHNs planned in Cambodia</p> <p>POTENTIAL: High level inter-sectoral advocacy</p> <p>LLIN/LLIHN distribution</p> <p>ITM – Uniforms</p> <p>Topical repellents</p> <p>Border post LLIN distribution</p> <p>Military clinic staff Quantification</p> <p>BCC with families – especially wives of security personnel</p> <p>KAP studies</p>	<p>EXISTING: (unknown)</p> <p>POTENTIAL: BCC with families (although access for NGOs may be limited due to sensitive nature of security work)</p>	<p>EXISTING: Retail sale of nets &amp; hammock nets</p> <p>POTENTIAL: Institutional sale of uniforms etc to MoD.</p> <p>Retail sale of: Other PP Tools</p>

## Non-Affiliated Mobile Target Groups-7 groups identified

MOBILE TARGET GROUP	GROUP PROFILE
<b>3. NON-AFFILIATED</b>	
iv. “Ad-hoc Labourers”	Local residents work on temporary / ad hoc basis e.g. Road building— crews live at site. New land development for rubber/palm oil plantations 1 <sup>st</sup> clear land/2 <sup>nd</sup> plant trees.
v. “New Settlers”	Landless people from other provinces seeking uninhabited land, therefore remote, often remain hidden, often non-immune
vi. “Highly Mobile Labour”	Opportunistic remote work. Often from other provinces. Loose groups, living in camps. Formerly gem miners, now gold miners, wood cutters, stump miners
vii. “Short-term Migrants”	(Termed M2 in Thailand)  Economic migrants, crossing borders for work.  Often planting or harvesting agricultural products (2-4 months) or in other short term situations - often exploitative.



OUTREACH POSSIBILITIES	PUBLIC SECTOR INTERVENTIONS	CIVIL SOCIETY INTERVENTIONS	PRIVATE SECTOR INTERVENTIONS
<b>Outreach difficult because no employer takes responsibility.</b>  <b>Can be of illegal status. NGOs, CBOs, local rights based groups, community dispute mediation groups, migrant learning centres</b>	<b>EXISTING:</b> Village Malaria Workers BCC & Dipping campaigns M2s receiving LLINs from clinic  <b>POTENTIAL:</b> Support to Cluster Mobile Malaria Workers  Issue pre-departure packs (distribution and dipping), malaria post workers, BCC & Dipping campaigns	<b>EXISTING:</b> M2s receiving LLINs from clinics Mapping of labourers (IOM and MMA led in Burma[cluster approach]) Cluster village mobility working groups (IOM supported in Burma and along Thai/Burmese border)  <b>POTENTIAL:</b> Scale up of– BCC, dipping and distribution Scale up of cluster village mobility working groups Distribution via community dispute mediation groups Distribution via migrant learning centres	<b>EXISTING:</b> Retail sale of: nets & hammock nets  <b>POTENTIAL:</b> Retail sale of other PP tools & LLITs

### Classification of mobile and migrants (Dr Rashid Abdur, WHO)

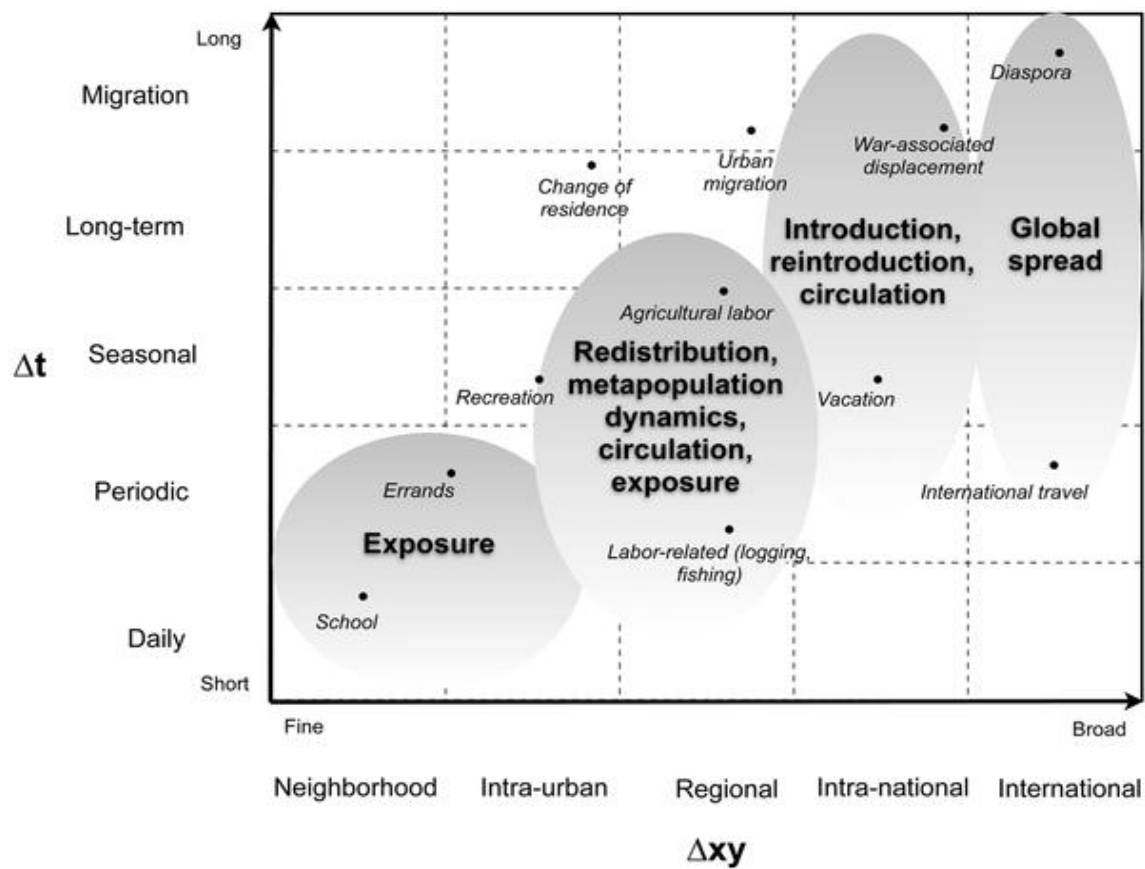
Level of Risk of Malaria	Type of Work	Type of Mobile/Migrant/forest working population	What may happen to them?	What can be done?
People at Very High Risk of Malaria	<p>Working in the primary (deep) forest &amp; stay overnight in the deep forest for:</p> <ul style="list-style-type: none"> <li>• Logging (though it's illegal but it may take place)</li> <li>• Miners ( gold, charcoal etc)</li> <li>• Hunting, bee honey collection (may be not that common now a day)</li> <li>• Clearing primary forest for hydroelectric dams/plantations/ other agricultural etc</li> <li>• Other deep forest related activities</li> </ul>	<p>Very hard to reach high risk forest workers</p> <ul style="list-style-type: none"> <li>-mobile/migrant people working in the deep forest</li> <li>- forest fringe workers who stay overnight in the deep forest</li> </ul>	<ul style="list-style-type: none"> <li>• Easy victims of malaria</li> <li>• Develop severe malaria (if non-immune mobile/migrant workers)</li> <li>• Deaths due to severe/complications of malaria</li> </ul>	<ul style="list-style-type: none"> <li>• Map the malaria hot spots as soon as possible. (it should not be too many!)</li> <li>• Establish MMW services (either identify someone from the mobile groups or MMW equip with motorbikes)</li> <li>• IEC/BCC on prevention &amp; treatment</li> <li>• Preventive measure (LLHNS; repellants)</li> <li>• Early diagnosis and treatment of malaria</li> <li>• Find ways/means for quick referral to nearest RH (if severe malaria)</li> </ul> <p><b>Can be very expensive but essential life saving measures!</b></p>

Level of Risk of Malaria	Type of Work	Type of Mobile/Migrant/forest working population	What may happen to them?	What can be done?
Moderate Risk of Malaria	<p>2ndary clearance of forest land for</p> <ul style="list-style-type: none"> <li>• Rubber plantation</li> <li>• Coffee plantation</li> <li>• Cassava plantation</li> <li>• Agricultural plantation</li> <li>• Hydroelectric dams in some areas</li> </ul> <p>Rubber plantation workers (during harvesting of rubber)</p> <p>Swidden agricultural workers (mainly high land ethnic minorities: sometimes whole family may move sleep for days/weeks at the farm areas)</p>	<p>Not always easy to reach workers</p> <ul style="list-style-type: none"> <li>-mobile/migrant people</li> <li>- forest fringe workers who regularly visit the forest</li> <li>-High land ethnic minorities</li> </ul>	<ul style="list-style-type: none"> <li>• Can be victims of malaria</li> <li>• May develop severe malaria (if non-immune mobile/migrant workers)</li> <li>• May die due to severe/complications of malaria</li> </ul>	<ul style="list-style-type: none"> <li>• Mapping malaria spots</li> <li>• Establish MMW services</li> <li>• IEC/BCC on prevention &amp; treatment</li> <li>• Preventive measure (LLINs/ LLHNs) or</li> <li>• Early diagnosis and treatment of malaria</li> <li>• Provision of referral to nearest RH</li> </ul>

Level of Risk of Malaria	Type of Work	Type of Mobile/Migrant/forest working population	What may happen to them?	What can be done?
Low Risk of Malaria	Rubber plantation workers- taking care of young rubber plants  Seasonal agricultural workers <ul style="list-style-type: none"> <li>• Corn plantation/ harvesting</li> <li>• Coffee plantation</li> <li>• Cassava plantation</li> <li>• Other agricultural works</li> </ul>	Less difficult to reach workers  -seasonal mobile/migrant people mainly come for agricultural works	<ul style="list-style-type: none"> <li>• Though not common but sometimes may get malaria</li> </ul>	<ul style="list-style-type: none"> <li>• Mapping</li> <li>• MMW services/ extended VMW services</li> <li>• IEC/BCC on prevention &amp; treatment</li> <li>• Preventive measure (e.g. loaning scheme of LLINs)</li> <li>• Early diagnosis and treatment of malaria</li> <li>• Referral if indicated</li> </ul>

Identification of mobile people (migrant) who come to settle in the malaria-proned area:

- ▶ **2.1 Mobile people who live stably/have contact with the village they live:** the people who work in the forest for many days/weeks such as hunting, fishing, guarding plantation, searching for non-timber forest product (resin collection...). They could access to services through the village they live in.
- ▶ **2.2 Mobile people who have no clear residential address/contact with the company: people who work for the company and come from other province (no resistance).** They live at the workplace (with the company) such as hydropower dam construction company, rubber plantation company, sugarcane plantation, food processing factory, oil palm plantation, animal raising farm... They can access to services through their company.
- ▶ **2.3 Mobile people who come to work in agricultural field/have contact with farm owner:** those who work for the plantation/farm owner i.e. cultivating, harvesting (at an average of 2-4 months according to the season). They frequently come from other province (have no resistance) and they can access to services through farm owner...
- ▶ **2.4 Security guards/those who have contact with the government: this group includes army, police, security guard as well as their family members such as wives, children...** They can access to services through their structure such as division etc. (but a bit hard to monitor as it is not so opened).
- ▶ **2.5 New settlers who have no contact/but later have contact with the village:** refers to those who do not have any land, come from other province to settle on the new land in the remote area, have no resistance and sometime live in hiding. It's difficult to reach this group.
- ▶ **2.6 Mobile people who have no contact at all: are the people who seek for works in the mountainous areas.** They mostly come from other province and are in small groups living in the tents... They mostly work in the stone/gold ore, cut trees which are the illegal jobs. Thus, it's difficult to reach them.
- ▶ **2.7 Mobile people who come from other provinces are mostly single, living temporarily by using hammock, tent or small cottage in the forest; along the road for a short period of time (have no resistance).** They enter the forest to illegally cut trees or to build road... Thus, it's difficult to reach them.
- ▶ **2.8 Migrant people (out of country): their addresses are not known.** They may be reached through NGO such as IOM etc.



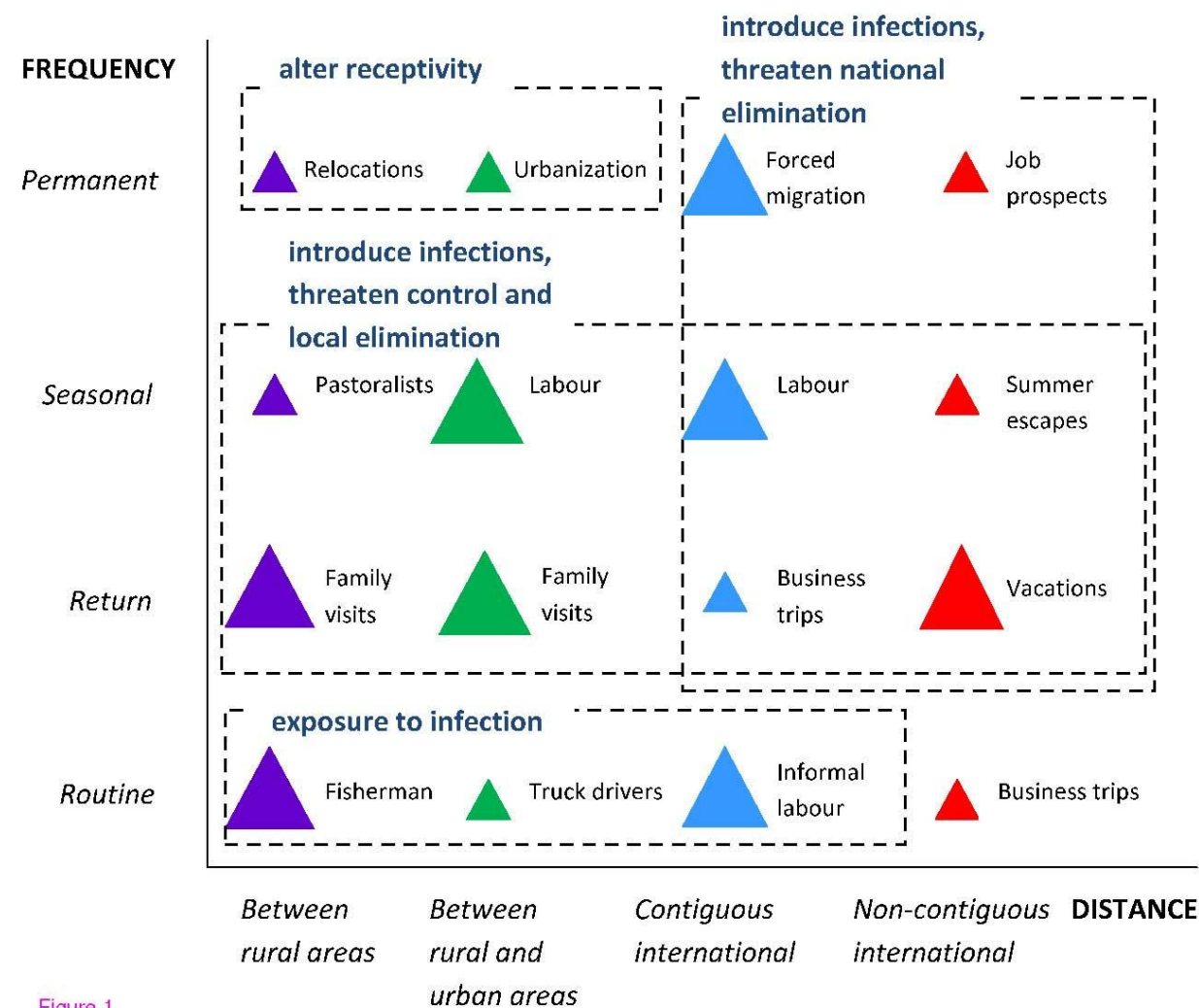


Figure 1

### Short term interventions: by the end of 2012

#### Prevention

##### Health education/BCC

#### Pre-departure

- Through mass media (Radio, TV...etc)
- Through IEC materials such as billboard, leaflet displayed at public health facilities integrated with other programs (HIV, HPI..) in malaria areas  
1.Causes, 2. protecting materials 3. malaria areas, 4. malaria services

#### During travel

- Through mean of transportation
  - Taxi drivers, buses, worker trucks (slips, CD, Video CD malaria cards for receiving free malaria services at public health facilities)
- Through IEC materials such as billboards, posters, leaflet , audio visual materials in the public (restaurant, bus stations, public gathering...)

#### Destination

- Through public events in prioritized malaria areas
  - Malaria education through village volunteers (VHVs, VMWs, MMWs...)
  - LLIN use
- Seeking appropriate malaria services (HFs, VMWs, MMWs...)
- Billboard display at the main roads, gates
- IEC material distribution at gasoline station, café, ....so on.
- Special education through land registration team
- Through mobile video shows...

#### LLIN distribution

#### Pre-departure

- 1 LLIN, 1 LLIN should be distributed to each family where a majority of migrant families are reported.
- Bundle nets sold widely in the market

#### During departure:

no strategy

## Destination

- Lending scheme (farm owners, company supervisors....)
- Free LLIN distribution through VMW/VHV/HCs
- LLIN distribution at border gates (for cross border migrants)

## EDAT

- Supply RDT/ACT
- Expand PPM (10 ODs by end of 2012)
- VMW have fixed schedule
- Quarterly mtgs with Private Providers to provider updates from CNM/MoH and to help motivate and gather feedback
- Additional incentives to private providers to encourage participation in program (ie. exchange visits, certificates, etc)

## Surveillance

- Clear definition/interventions for mobile and migrant populations
- Identify clear feasible surveillance approach for MMP working in the farm and MMP working in the forest
- Current/potential surveillance activities:
  - In Farm: MMW to work with MMP working in farms- need to update the reporting form. If MMW in farm, system can be easily implemented, if not, need to identify responsible person to collect/report data
  - In Forest: no clear strategies. Identify companies working in the forest.
- Need to identify/prioritise MMP at highest risk to focus intervention/surveillance systems

## Research needs

- The questions that can be answered by 2012 are:
  - **Package 1: Human**
    - Sustainability: How to maintain and increase motivation (proved to be related to performance)?
      - Look at other factors that can contribute to motivation besides financial incentives.
  - **Package 2: BCC/media**
    - What is the best communication (HE) tool for reaching migrants?
    - Is mass media more effective than interpersonal communication?
  - **Package 3: Protection**
    - Do we need additional tools to ensure better protection among migrants?
    - Which tools should be targeted at the specific migrant categories? i.e. ITM, loaning scheme? Should target all migrants or only plantations and farms, etc.

## Long term interventions: 2013-2015

### Prevention

- Health education/BCC
- Through mass media (Radio, TV...etc)
- Through IEC materials integrated with other programs (HIV, HPI..) in malaria areas countrywide
- 1.Causes, 2. protecting materials 3. malaria areas, 4. malaria services
- Through mean of transportation
- Taxi drivers, buses (slips, CD, malaria cards for receiving free malaria services at public health facilities)
- Through IEC materials such as billboards, posters, leaflet in the public (restaurant, bus stations, public gathering...)
- Through public events in prioritized malaria areas
- Malaria education through village volunteers (VHVs, VMWs, MMWs...)
- LLIN use
- Seeking appropriate malaria services (HFs, VMWs, MMWs...)

### LLIN distribution

#### *Pre-departure*

- 1 LLIN, 1 LLIN should be distributed to each family where a majority of migrant families are reported.
- Bundle nets sold widely in the market

#### *During travel*

- no strategy

#### *Destination*

- Lending scheme (farm owners, company supervisors....)
- Free LLIN distribution through VMW/VHV/HCs
- LLIN distribution at border gates (for cross border migrants)

**Long term:** farm owners, company have to buy LLINs for their workers

### EDAT

- Steady supply of ACTs/RTDs
- Expand MMW program to more plantations/farms (technical, financial, human)
- Trained position at private companies to treat malaria and other diseases (technical, financial, human)
- Expand PPM to all endemic ODs (technical, financial, human)
- Use outcomes from PPM quarterly mtgs to support future interventions (technical, financial, human)

- Implement DOTs in all endemic ODs (technical, financial, human)
- SMS for private providers to report cases in real time (technical, financial, human)

### Surveillance

- To support these activities more financial and human resources are needed: e.g. forest (ACD/mobile FSAT, etc)
- With regular updates:
  - Mapping of hotspots
- Need to track progress of interventions, monitor resistance (identify ways of monitoring, supervising data quality, establishing response systems, etc).
- Emphasize the surveillance to ensure we capture mortality to provide evidence of 2015 no malaria deaths targets

### Research needs

1. What is the point in time for providing information and protection tools for migrants? (pre-departure/on the way/upon arrival?)
2. How to track imported cases among migrants? Mapping where do migrants get malaria from? Not at the place of reporting but the place of infection.

### Introduction

Participants at the workshop heard 14 presentations from speakers who shared experiences and results from their organisations' research, which was focused primarily on migrant and mobile populations within Cambodia. A summary table of the presentations can be found in Appendix 1 of this report. The overarching objective of the day was to create a picture of what research is available and where gaps in knowledge lie in relation to MMPS. In doing so, priority areas for research would be identified, and shared experiences would be used to inform Cambodian national strategy as well as individual project designs

### Definitions

In order to aid strategic targeting of research and projects, a system of categorising MMPS into sub-populations was presented and discussed. Classification into smaller groups provided clarity in terms of which groups would be the most accessible, and where priorities for action should lie. See *Appendix 2* for a table of sub-categories.

### Research

One of the take-home messages was a call for all researchers to increase the speed at which their research takes place. Considering that the dynamics of mobile populations change so rapidly, there is a need to shorten the time between initiation and outcome dissemination, so that information retains relevance.

Despite the acknowledged difficulties in monitoring the movements of MMPS, the TRAC study is mapping available data to understand patterns of movement and – in addition to clinical studies in endemic areas – identifying the determinants of detection and treatment seeking behaviours (pg #). One of the reasons for difficulties in monitoring movements of MMPS is that locating and reaching them is a challenge. RDS methodology was used as a way of overcoming this problem in a study initiated by CNM, which resulted in information being gathered from over 1400 respondents (pg #). Qualitative methodologies are also the focus of the SOREMA survey implemented by IRD from 2012-2014, which seeks to use fully immersive strategies to investigate the determinants of malaria related behaviours amongst MMPS in endemic areas. In 2012, IRD is also investigating the efficacy and acceptability of innovative new personal protection measures (long-sleeve shirts and hats) amongst forest workers (pg#).

### Implementation

BCC and IEC were key topics – recognised as imperative for influencing the health actions taken by MMPS, who are often more vulnerable than the general population. Frequently though, they are more difficult to reach with traditional mass-media campaigns, and therefore novel strategies are required. It was agreed that difficulties in implementing and, importantly, monitoring of outcomes was difficult among a rapidly changing population. However, this should not stop programmes being implemented whilst research continues in parallel.

A common issue encountered by partners is the sustainability of continual training, monitoring and motivation of volunteers who are enlisted to reach MMPS with ACD, BCC/IEC or EDAT. This was a key lesson

learned in the containment project carried out along the Thai/Cambodian border by CNM and partners (pg#). Similarly, results from the taxi driver health education pilot (pg #) were very positive *when* taxi drivers were motivated to pass on messaging. More research and pilot studies are needed to test the most effective and sustainable motivational strategies. This issue of sustainability was also discussed in relation to the generally successful LLIN lending scheme (pg #). Part of the success and sustainability of the scheme could be attributed to good decentralisation - integration of the scheme effectively into the provincial and local health system. However, questions remained as to what would happen when the funding of free LLINs ceased; the exploration of alternative purchasing avenues is required – determining the potential feasibility and acceptability of purchase by farmers, public sector and users themselves.

### Diagnosis and Treatment

It was recognised that an important part of ensuring access to diagnosis and treatment for MMPs was partnering with private companies who employ large numbers of temporary workers. Some partners have had success with multi-sectoral profiling and collaboration with ministries, private companies and local health stakeholders to facilitate MMPs' access to diagnosis and treatment. The increasing willingness of private companies to engage in collaborative health servicing is encouraging, however, accessing MMPs engaged in more sensitive areas such as land clearance and hydro-power remains a challenge to be overcome.

The GUARD study indicated that there were some problems with RDT usage and that providers need to receive better and more consistent training (pg#). Information from PSI's 2009 household survey gives an indication of where the general populous seeks treatment when they have a fever. Of those who seek treatment outside of the home, **79%** go exclusively to the private sector; **11%** go to the public and private sector and **10%** go exclusively to the public sector. The total volume of antimalarial drugs moving through the public (30%) and private sectors (70%) has remained the same in 2009 and 2011. Availability of monotherapies has dropped, despite there being an almost year-long Malarine stockout amongst private providers in 2011. It is hoped that diagnosis and treatment will improve with the continued roll-out of the public-private-mix-(PPM) intervention, which is scheduled to cover 18 operational districts (ODs) by 2015. More effective methods of tracking patients and gathering the large amounts of data available from this initiative will be vital in tweaking the project and informing other such strategies.

## Welcome and Opening Remarks

### Dr Chea Nguon, Deputy Director, National Centre for Parasitology, Entomology and Malaria Control (CNM)

Dr Chea Nguon welcomed participants to the workshop and thanked them for their attendance. He highlighted the excellent opportunity that the workshop presented to gather and discuss the results of research into the mobile and migrant population in Cambodia, to share lessons learned and develop new strategies to reach this group. Dr Chea Nguon expressed a desire for the discussions of the day to contribute to the creation of good policy, which is based on evidence collected by government and partners in the field.

## Objectives of the Workshop

### Sara Canavati, Malaria Consortium

Sara Canavati outlined the objectives of the workshop, as follows:

- 1) To identify research focused on mobile and migrant populations (MMPs) to share what has been done and where it was carried out in order to avoid duplication in the future.
- 2) To highlight challenges and lessons learned during program implementation.
- 3) To identify knowledge gaps and discuss potential research questions to fill these gaps.
- 4) To inform strategy direction for reaching MMPs.

## Session 1 – MMP Related Research

### Dr Philippe Guyant, London School of Hygiene and Tropical Medicine

#### TRAC – Tracking Resistance to Artemisinin Collaboration

Dr Guyant described the TRAC study objectives and methodology, including the use of a conceptual framework and mapping of existing data to understand the patterns of movement of migrants within the country and the determinants of their decisions in relation to their demand and access to malaria treatment. The objectives of the study are:

- To understand the factors affecting demand and access to antimalarial treatment
- To explore the relationship between risk factors for malaria, antimalarial drug usage and drug resistance
- To describe quantitatively and qualitatively the risk of emergence and spread of artemisinin resistance, particularly focusing on population movement
- To identify strategies and interventions that will contribute to the containment of drug resistance with a focus on the antimalarial drug use and the highest risk populations

Dr Guyant described how this research is being linked to TRAC clinical studies taking place in Preah Vihear, Pursat, Pailin and Rattanakiri, which includes questionnaires and mapping of patients' movement away from their homes.

## Challenges and Needs

<i>Challenge</i>	Information extracted from studies of MMPs becomes out-dated quickly.
<i>Need</i>	Better, more stream-lined, methodologies to enable faster flow of information from program/study implementation to dissemination.
	Better understanding of population movement drivers in both time and space.
	Better understand perceptions and practices and behaviour of MMPs

### Discussion:

*Census Data:* There was a discussion about the usefulness of data derived from census surveys. There are questions as to whether or not the current residence is their permanent residence, and if not then where had they come from. It was recognised to be relatively easy to track longer-term migration with this data but smaller movements are much harder to follow. Dr Guyant re-iterated his comments about the need for methodologies to capture the movements of these short-term MMPs.

*Definitions of MMPs:* Dr Steven Bjorge (WHO) highlighted the need to have clear definitions of what is meant by migrant and mobile, and also the need to classify within those categories. It was generally agreed, and has been recognised by the health community, that most movement of the MMP is internal. Different types of MMPs can be observed in the field, and defining these sub-groups should be the first step in designing programs and strategies to reach them. It was pointed out people can also move between these sub-categories over time, which adds a layer of complexity, but should not stop efforts moving forward, particularly as key messages should remain consistent across sub-categories.

### **Dr Chea Nguon, National Centre for Parasitology, Entomology and Malaria Control (CNM)**

#### Internal Mobile and Migrants Population Study Using Respondent Driven Sampling Methodology

#### *Methodology*

Dr Chea Nguon described this study as one of the first in Cambodia to use Respondent Driven Sampling Methodology in order to overcome the inaccessible nature of many MMPs. Pramuoy Health Center and a VMW house in Chhay Louk village (both in Veal Veang - N=737) were selected as study sites, as well as 2 sites in Pailin (Andong2 and Pang Rolem -N=764).

#### *Key Findings*

	Pailin (n = 764)	Veal Veang (n = 737)
Percentage of the migrants that received health message (about malaria) in last 3 months	89%	94.5%
Source of health information:		
Family/Friends/neighbours	29.7%	57.7%
Radio	57.1%	23.5%
TV	31.3%	32.4%

Those who do not own an ITN:	N=509 (66.5%)	N=322 (43.7%)
Reason given:		
Do not need one	41.1%	23.2%
Do not know where to find one	26.4%	19.5%
Too expensive	25.0%	24.3%
No money to buy one	1.3%	20.4%

Dr Chea Nguon emphasised the need to triangulate the data from this RDS with other studies being carried out by partner organisations. He noted an encouraging drop in the use of private health services but highlighted the need to increase the awareness of the availability and services of VMWs and MMWs amongst MMPs.

**Source of medicine (n= 115 in Pailin, n = 219 in Veal Veng)**

(Respondents could choose more than one answer)

Gov't hospital/clinic	<b>47.8</b>	<b>27.4</b>
Private hospital/clinic	<b>21.7</b>	<b>36.7</b>
NGO	1.7	0.0
Drug outlet	<b>11.3</b>	<b>20.0</b>
Market stall/shop	0.9	4.2
Dispensary at work	0.9	0.5
VMW	<b>20.9</b>	<b>12.6</b>

*Lessons Learned from Field Implementation of RDS*

- Good collaboration with the local authorities in informing the community and organizing logistics for the study to run smoothly.
- Use of ID stickers ensured precise tracking of participants and their relations to one another.
- Frequent field supervision was important in motivating field teams and ensuring adherence to survey protocols.
- Excellent field management and local knowledge by CNM and its partners was essential to successful field work.
- Appropriate staffing, local networks (VMWs), site selection, seeds, and supervision.

**Frederic Boudier, IRD (Institut de Recherche pour le developement - Institute of Research for Development)**

Sorema – Society, Resistance, Malaria

Mr Boudier spoke of his method of immersive qualitative research and outlined two academic, research-oriented, studies that are currently under way:

2012            *The acceptability, feasibility and field efficacy of personal protection measures for outdoor transmission of malaria among specific at risk groups*  
Taking place in Kratie, Koh Kong, Kampot  
Collaborating with CNM & PFD

Mr Boudier explained that this study would trial especially designed, impregnated, long-sleeved jackets and hats as a preventative measure targeted to MMPs. Jackets are currently in production.

2012-2014     *SOREMA - Public interventions and health inequalities in recomposed natural and social ecosystems of the Mekong Sub-Region.*  
Taking place in Koh Kong, (Thmor Bang, Russei Chhrou, Tatai Leu), Kampot (Chumkiri and Steung Keo) and Mondulkiri (Dak Dam and Busra) – with geographical extensions in Southern Laos and Vietnam  
Collaborating with the Pasteur Institute, CNM and the Royal University of Phnom Penh

Mr Boudier elaborated on the research approach that would be used at the microsites. A set of openly-oriented qualitative methodologies would be used to study ecological changes, social changes (including MMP movement patterns), and the effects of public health interventions. He stated that RDS is not always necessary to reach MMPs and that through collaborative anthropology and immersion IRD hope to reveal the determinants affecting the evolution of malaria and malaria resistance.

**Dr Boukheng Thavrin, National Centre for Parasitology, Entomology and Malaria Control (CNM)**

A Strategy for the containment of artemisinin resistant malaria parasites in South East Asia:  
BCC lessons learned from the containment project.

Dr Boukheng Thavrin presented on behalf of Mr. Muhammad Shafique, Malaria Consortium, and gave a brief overview of the BCC and IEC components of the containment project, which was initiated in January 2009 and reached 10 provinces in Cambodia and 7 in Thailand. Malaria Consortium provided support to CNM and partners from Thailand, to harmonize their BCC strategies.

*Key Achievements*

*Strong Coordination:* BCC teams from Cambodia and Thailand coordinated and collaborated on regular basis to develop bi-lingual IEC materials i.e. posters, cutouts, and pamphlets for mobile and migrant populations.

*Innovative approaches:* Dr Thavrin described the implementation of a positive deviance (PD) approach to BCC amongst MMPs. A baseline survey was conducted in September 2010 and an endline survey in March 2012. Results are still being analysed but will be shared soon.

### *Recommendations for future BCC activities:*

*Community involvement:* Active community involvement is needed in all the project activities

*Sensitization of landowners:* Mobilization and sensitization of farm/landowners (Cambodia) and factory owners (Thailand) is required to reach out to mobile and migrant population

*Capacity building of volunteers:* Training of volunteers in communication and health education skills to enable them to communicate messages effectively

*Motivation of volunteers:* Proper acknowledgement of volunteers is required through timely appreciation of their work and capacity building

## **Discussion**

### *Methodologies*

There was a general consensus that there is a need for different methodologies to accumulate evidence for action, and it is encouraging to see that MMP-specific research is taking place. However, regardless of the method, research needs to have a quick turn-around, so that it can be of use when trying to reach a rapidly changing population. Systems of monitoring and anticipation of population movements need to be set up to enable better distribution of bed nets amongst MMPs.

## **Session 2 - MMP implementation experience and plans**

### **Dr. Soy Ty, University Research Corporation.**

URC-CAP Malaria: Taxi drivers and LLIN Lending Scheme

Dr. Soy Ty described two MMP-targeting projects, which began implementation in 2009 in collaboration with CNM.

#### 1) Taxi Driver Health Education Pilot:

##### *Results*

- Reached 24,146 MMP
- 25% of taxi drivers talked to passengers about malaria.
- 16% played CD of malaria health messages

##### *Lessons Learned*

- The taxi driver network is one of the channels through which to reach MMP.
- Need to find a sustainable way of motivating drivers to deliver messages.
- Need to follow up passengers to determine impact on behaviour.

#### 2) LLIN lending scheme 2009-2011:

##### *Results*

- Distributed 33,146 LLINs to farm workers in Battambang and Pailin (via 2,915 farm owners)

- 85% of LLINs reported usable after 2 years.
- February 2011 qualitative evaluation showed that farm owners accepted the lending scheme and wished to continue it due to perceived benefit of having healthy workers.

#### *Lessons Learned*

- Good method of integrating MMP into health system (because it is decentralised to OD level)
- Difficult to develop and maintain a current list of farm owners.
- Competing priorities of farm owners need to be addressed (time cost of washing nets etc)
- Need to establish indicators to measure outcomes of MMPs interventions?

#### **Dr Song Ngak, Family Health International (FHI) 360**

Mobile Malaria Worker (MMW) programme in 40 farms in Pailin and the net loaning scheme

Dr Ngak presented an overview of the three strategic surveys that FHI 360 carried out in Pailin by between 2009 and 2011, and listed another two surveys to be carried out in June and July of 2012.

#### *Results of mobile population mapping in 2009:*

- Majority of MMP comes to Pailin two times a year (June/July, December/January)
- Stayed an average of 16 days (range 5-120)
- Most workers coming from Battambang, Banteay Meanchey and Pursat

#### *Results of Pilot of LLIN loaning scheme – June 2010 to May 2011*

- 490 nets distributed to ten farm owners
- Nets were used by 1,376 people (an average of 1.53 times/ year)
- Only 5 were torn

#### *Lessons Learned*

- Good cost-efficiency as can be used multiple times, however, requires monitoring and washing effort on behalf of farmers.
- Feasible and well supported by farm owners who saw it as their social responsibility to provide nets for their workers.

Dr Ngak noted that the results of the November 2011 KAP survey will be circulated around August, 2012. He also outlined a survey and mapping project that will be carried out in the coming months, to determine the client satisfaction of the malaria control activities from those that experienced malaria in the 46 targeted villages in Pailin from 1 January 2011 to 30 December 2011.

#### **Dr. Po Ly, National Centre for Parasitology, Entomology and Malaria Control (CNM) and Sara Canavati, Malaria Consortium**

Evaluation of Community Malaria Worker Performance in Western Cambodia

Dr. Po Ly described the cross-sectional mixed-methods study that was carried out to assess VMW/MMW performance in terms of their knowledge and delivery of key BCC messages. These factors, along with job satisfaction, challenges and constraints in accessing MMPs, were evaluated amongst 165 VMWs and 34 MMWs from zone 1 and 2. Dr Po Ly and Ms Canavati presented some of the key observations, challenges and recommendations resulting from the evaluation.

#### *Key Observations, Challenges, and Recommendations*

- VMWs/MMWs are generally performing well - above the 80% set performance level, except in DOT and awareness of key messaging.
- The VMW is the preferred channel for health education
- Need to continue training and address misconceptions (boiling water; dengue v malaria prevention).
- Necessity of identifying different groups amongst MMPs, and specific measures taken for them, such as:
  - o Gold mine workers
  - o Rubber plantation workers
- Long-term migrants can be trained as VMWs/MMWs
- People from non-endemic areas are travelling to endemic areas and are hence uneducated in malaria prevention, diagnosis and treatment. Therefore, there is a need to target non-endemic areas with health education (pre-departure).
- Village chiefs are key providers of information and should be educated and equipped with tools.
- More research is required to find out how to improve DOTs, overcome geographical and transport barriers to follow-up.

#### **Henrietta Allen, Population Services International (PSI)**

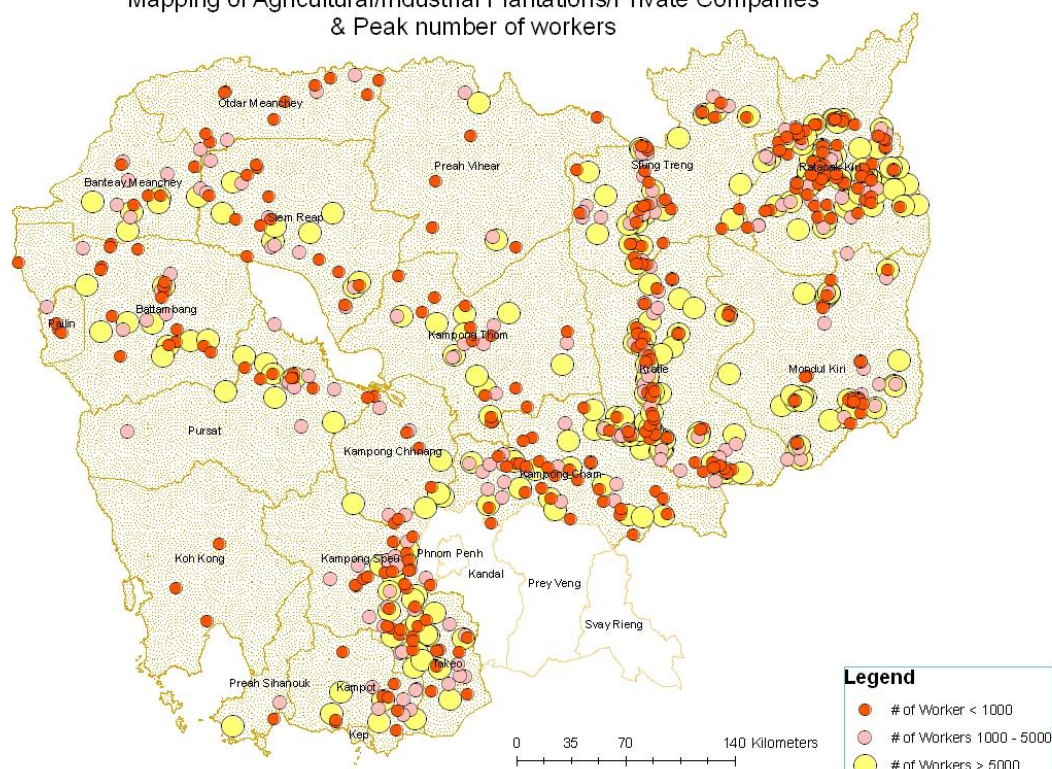
##### **Planned Studies and Current Implementation of Programmes which reach MMPs**

Ms Allen outlined PSI's program of work in response to CNM's call for innovative strategies to malaria prevention and control in private companies and plantations at national level. Two studies will be carried out followed by a program of health services to be provided on site.

#### **1/. National Mapping of Plantations and Private Companies**

While smaller scale studies have been carried out, no national map of the position of Agricultural /Industrial Plantations/Private Companies currently exists for all 20 provinces. PSI will carry out a rapid assessment to (i) map the distribution of these outfits, (ii) to gauge the relative size of their migrant populations by season and (iii) evaluate the accessibility of the nearest health services available (see example map below).

Mapping of Agricultural/Industrial Plantations/Private Companies  
& Peak number of workers



## 2/ Qualitative Study

A second qualitative study will aim to build an accurate picture of the behaviours of the different types of MMP. Questions will include: what are their typical seasonal movements, what are their wage levels and their perceptions of risk, what health care services do they access and why, which information channels do they trust, where will it be easiest to engage with them, what prevention methods do they use, and what will convince them to change their unhealthy behaviours to healthy ones. With this data, PSI and partners will be able to tailor their education messages and ensure that the approaches used to reach this sub-group of the population are the most effective.

Equipped with data from these two studies, PSI will roll out a program of health care in the workplace using the following steps:

- **Inter-sectoral provincial meetings:** Representatives from the PHD, the private companies and local leaders will be invited to ensure the program is accepted and considered legitimate.
- **MOUs:** MoUs will be signed between PSI and the company to ensure that the company clearly understands that package of health care services that PSI will provide in return for routine data on the number of cases referred or treated.
- **Health Care at Workplace:** According to 3 categories, PSI will set up a referral system or health care services at the workplace (see table below).
- **Data:** In return for providing health services, the plantation/private company or nearest outlet will be required to provide regular data reports on the number of Pf +, Pv +, Mixed or Negative cases.

This data will be reported to CNM so that an accurate picture of the infection levels in the plantations/companies can be built up.

- **Data from Used RDTs:** PSI has been collecting used RDTs from private sector providers since early 2010. Over a 14-month period nearly 90,000 RDTs were returned to Phnom Penh and the data extracted: 32% were positive (14% Mix; 16% Pv; 2% Pf) and 68% were negative. The same approach will be used in the plantations / companies and the data sent up to CNM.
- **Mobile Video Units:** MVUs will be diverted to focus specifically on the plantations and companies to raise the awareness of the owners and workers since both groups are often less cognizant of the risks of malaria.
- **Prevention:** PSI will set up net dipping teams and net lending schemes with CNM's assistance for the plantation/private company workers.

Level of access to health services	Approach
1 Has access to a public sector outlet or VMW.	PSI will train up a 'Plantation Malaria Worker' whose job it will be to refer suspected patients to the public sector outlet/VMW.
2 Only has access to a private sector outlet.	PSI will train up a 'Plantation Malaria Worker' whose job it will be to refer suspected patients to the private outlet which will be stocked with RDTs & ACTs and receive monthly support visits.
3 No access to health products / services or the company has its own clinic on site.	PSI will train up a 'Plantation Malaria Worker' who will be stocked with RDTs & ACTs to test and treat confirmed positive workers on site and will receive monthly support visits.

## Chin Polo, Partners for Development

### MMP Related Program and Research

Mr Chin described PFD's work in involving non-health sector stakeholders from provincial to community level, that could provide MMPs with preventative, diagnostic and treatment services for malaria. Mr Chin also described research implemented, in collaboration with IRD, to assess the acceptability, feasibility and efficacy of innovative personal protection methods as a prevention measure amongst forest workers (impregnated jackets/hats). Some experience of inter-sectoral collaboration, MMW training and training of trainers in Kampot, Koh Kong and Kratie resulted in the following:

#### *Lessons Learned and Recommendations*

- Multi-sectoral profiles are a useful tool to identify and target areas attracting MMPs, collect background information about the area and identify most vulnerable populations. Interdisciplinary research is needed to cover the complexity of MMP issue
- Multi-sectoral provincial and district workshops are crucial for fostering collaboration. Work with the provincial Department of Industry, Mines and Energy, the provincial Department of Education

youth and sports, the provincial Health Department, and private companies (such as hydropower and rubber plantations) should continue.

- Outreach to MMPs where they are staying .
- Select MMWs from within private companies
- Find a strategy to distribute LLINs among MMPs in private companies, with support from local government.

### *Challenges*

- Difficult to reach and map MMPs
- Sensitivity to research on MMPs in areas of land development
- Lack of understanding among NGOs, private companies and health sector institutions
- Lack of collaboration amongst private companies

## **Discussion**

### *LLIN Lending Scheme*

There was a lengthy discussion of the LLIN lending scheme, its successes, challenges and sustainability. One of the key problems is the program's sustainability after financial support from GFATM is withdrawn, which is inevitable in the future. Who is going to buy the nets for the farm owners to lend? Was there a possibility of farm owners purchasing them? Potentially – because they currently see it as a benefit to have healthy workers, and recognise it as a social responsibility (akin to corporate social responsibility), but this may change if it is not free. The idea was floated that it be compulsory for employers of MMP to purchase nets, written into legislation, just like motorbike helmets for example. This needs to be further researched to determine whether it is included as a key strategy.

Questions of governance were also raised. Who will take over the administration of the program if/when NGOs withdraw? As per the presentation, it was acknowledged that identifying and keeping track of farm-owners was costly and time-consuming. If PHD and HC staff have time limitations already, perhaps more of the burden needs to fall on other sectors or stakeholders such as commune council chiefs.

### *Knowledge and Action Priorities*

It was agreed that more information is needed regarding target MMP groups and where they can be found. The importance of knowing what is being done by government and development partners was highlighted, determining who is doing what and where, to reduce overlap and money wastage.

It was suggested that too much money and time is spent on low-risk areas and populations, when hotspots are known and can be directly targeted. This is necessary if the country is to reach its Millenium Development Goal commitment of zero deaths from malaria by 2015.

Discussion also focused on the need to overcome access barriers of private companies to research MMPs in employed by them, thereby determining the best way to provide services for them whilst creating strong and sustainable relationships with the private sector.

## Session 3 – Access to Diagnosis and Treatment

### BBC Media Action (in absentia)

#### Experience on qualitative studies on migrant

Representatives of BBC Media Action sent their apologies for their absence from the workshop but contributed details of their findings via email, for inclusion in the final report.

In 2009, BBC World Service Trust<sup>5</sup>, in collaboration with CNM and the Ministry of Health, conducted a Knowledge, Attitudes, and Practices (KAP) survey in Battambang, Pailin and Preah Vihear.<sup>[3]</sup>

#### *Key points and Recommendations from the KAP survey:*

- While one-third of persons living in remote, high malaria risk areas do not have access to broadcast media, 40% own their own phones and 96% live in areas with mobile phone coverage. It is therefore possible to consider reaching this group via SMS-based campaigns. Additionally, word-of-mouth information exchange could be encouraged.
- Respondents mentioned radio (77%), TV (59%) and health workers (68%) as their main sources of malaria information. A popular song broadcasted via TV and radio was recalled the most. Thus, malaria education campaigns via mass media (particularly songs) and through health workers on key malaria messages should continue.

### Sara Canavati, Malaria Consortium

#### Community KAP on malaria BCC interventions on control, prevention, diagnosis and treatment among migrants in Pailin

Sara Canavati presented the findings from the baseline survey and emphasised that the MMWs had been newly introduced to the communities studied. The purpose of the study was to gauge improvement levels when a two-year mid-term evaluation is carried out.

#### *Key Findings*

- While respondents generally failed to reach the 60% target outcome in most knowledge areas studied, there was an indication of better malaria practices with increasing malaria knowledge.
- In general, MMWs were not reaching migrants as expected and migrants were not approaching MMWs, however those who received services from MMWs were satisfied. Once contact levels increase it is expected that the MMWs will be well accepted.
- Misconceptions related to the causes of malaria (i.e. unboiled water consumption) and correct treatment regimen still exist. There is a need to revise BCC messages and strengthen efforts to reach MMPs.
- There is a lack of knowledge on how to take care of nets and dipping with insecticides is not taking place through the farm lending scheme.

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<sup>5</sup> Previous name for BBC Media Action

- There is a increasing expectation from MMPs that they do not have to purchase nets – with 20% of them waiting for their free distribution. Private net sellers in the markets are starting to halt sales.
- Knowledge of the existence of MMWs and use of MMW for testing and treatment was very low (12.6%). This was expected as the programme has just started in this area and the information is meant to serve as a baseline.

## Discussion

There was agreement from the room that we need to keep messaging simple – confusions over boiling water, malaria versus dengue prevention, are caused by too many messages coming at once to a poorly educated audience. It is much better to focus on reinforcing a key set of positive behaviours, without having to bombard people with all the specifics of why these actions need to take place. Changes in knowledge, particularly in malaria, have taken decades of time and large financial investment to occur – not long ago the majority of Cambodians thought it was caused by spirits – so we need to reinforce good behaviour first and keep more in-depth education as a secondary priority.

### Dr Philippe Guyant, London School of Hygiene and Tropical Medicine

#### GUARD - Good Use of Antimalarials and RDTs

Dr Guyant outlined the mixed-method approach of the GUARD study (on behalf of the GUARD study team), designed to assess and understand RDT deployment and performance, perception and use. The study took place in 6 sites within the containment zone and 6 sites in non-containment areas.

#### *Key findings*

- 53% of providers who sold any antimalarials also sold RDTs
- Focus group discussions (FGDs) suggest difference between drug selling (“lout tnam”) and diagnosing and treating (“pinit pchier bal”). These should be differentiated in implementation and in studies.
- The cost of malacheck was 3000 riel to the patient, although the recommended retail price is 1000 riel. Although it is not certain, this may be due to the 2011 RDT stock out in the private sector which meant prices rose as the commodity became scarce.
- Main problems with RDT use:
  - o Too much or too little blood
  - o Not waiting the required 20 minutes
  - o Unsafe disposal of lancet
- During training and supervision of providers the following issues need to be emphasized:
  - o How to diagnose and treat the “RDT negative” patient
  - o If selling antimalarials or antibiotics, to sell full courses, not just a few tablets (in cocktails)
  - o To try to use the right amount of blood and buffer
  - o To wait the full 20 minutes before reading the test
- A system for the safe disposal of used lancets is needed
-

## Discussion

Private providers may be reluctant to give RDTs for a number of reasons. The findings from the focus group discussions suggested that they were used along with both 'selling' and 'treating' practices. However they did not appear central to dispensing decisions for either, situated in a grey area between the two. The principle of testing appeared to be assimilated into practices related to the ideal of *curing* the patient; although for these providers there seemed to be more trust in microscopy and other laboratory tests. In terms of self-reported problems, 28% reported problems, mainly either related to the tests not 'showing' malaria, and logistical issues with the pipette and buffer solution. The RDTs are packaged in boxes of 10 tests with one bottle of buffer. If the buffer runs out, it is not possible to perform the test. This could partially explain the low number of tests being offered. To solve this issue PSI negotiated with the supplier to provide extra bottles of buffer and is now converting to individually packed RDTs (with 1 buffer/test).

There was a discussion of the differing levels of knowledge of test sensitivity when it comes to RDTs versus microscopy. Anecdotal evidence was provided for Health Centre staff not trusting microscopes - favouring RDTs instead. There was uncertainty about the level of training provided. Other studies have shown that this is causing mistrust of providers; when people are told that the RDT is negative but are later diagnosed at a HC they lose faith in the RDTs and testers.

### Dr Po Ly, National Centre for Parasitology, Entomology and Malaria Control (CNM)

#### VIMWAT Study - Village Malaria Worker Access to Treatment

Dr Po Ly outlined the 3-arm cohort study that was carried out in Kampot between August 2011 and March 2012. The study compared villages with no VMWs, villages with a VWM and villages with an "eVMW" (who performs normal VMW duties but also has an "expanded" role, to treat respiratory disease and diarrhoeal disease in children < 5 as well).

Analysis is ongoing but preliminary findings suggest that VMWs are reaching the target population and that appropriate diagnosis and treatment for malaria seems to be more frequently reported in the eVMWs arm compared to the other two arms in this area.

Dr Po Ly mentioned that further results and analysis would be available soon.

### Henrietta Allen, Population Services International (PSI)

#### ACT-Watch in Cambodia

Ms Allen presented an overview of the international research, ACT-watch, funded by the Bill & Melinda Gates Foundation and designed to provide policy makers and programmers with robust evidence to guide decision making. The sampling frame is established in such a way to evaluate both the public and private sectors and there are 3 components namely:

- (i) **An Outlet Survey:** To assess the type of drugs, prices and volumes being dispensed by the public and private sectors.
- (ii) **A Household Survey:** To assess the mirror image of the Outlet Survey, in other words, where do people seek malaria treatment, how much do they pay, do they get tested and what do they report receiving.
- (iii) **A Supply Chain Survey:** To assess pricing structures in the supply chain. This is carried out just one time.

In Cambodia, the baseline Outlet and Household surveys were carried out in 2009 with follow ups in 2011. Final reports are ready for the 2009 studies and the 2011 reports are expected by the end of July with a full dissemination for all in-country partners.

Although the surveys do not target MMPs they still provide an excellent picture of what is happening in the country, regarding ACT suppliers.

### *Key Findings*

#### Outlet Surveys – 2009 & 2011(Preliminary Results)

- A census of >7,000 outlets (2009) and >18,500 outlets (2011) was undertaken with a full audit of >1,000 (2009) and >1,500 outlets (2011).
- The outlet types range from Health Facilities, VMWs to pharmacies and Drug stores.
- The 2009 sampling frame merged Zone 1 and 2, however the 2011 sampling frame separated Zone 1, Zone 2 and Zone 3 which means the data will be able to provide data on the impact of the Containment Strategy.
- The volume of anti-malarial drugs moving through the public and private sectors has not changed between 2009 and 2011: 30% move through the public; 70% through the private.
- The availability of oral artemisinin monotherapies (out of all outlets with antimalarial stocks) has dropped from 6% (2009) to 1% (2011).
- Despite the 2011 Malarine (AS/MQ) stockout in the private sector, it appears that private providers replaced Malarine with Chloroquine - rather than resorting to monotherapies – which is heartening.

#### Household Survey – 2009

- In 2009, > 22,000 households were screened to locate the sample of approximately 1,000 respondents who reported having ‘malaria fever’ (the survey looked for a specific set of symptoms in order to eliminate fevers caused by other illnesses).
- Of those seeking treatment outside of the home, **79%** go exclusively to the private sector; **11%** go to the public and private sector and **10%** go exclusively to the public sector
- Approximately 50% of the respondents reported that they received a test and approximately **75%** reported receiving their treatment from the private sector.

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### **Discussion**

There was a question about whether treatment seekers went from private to public facilities during the stock-out period. Ms Allen responded that unfortunately this question wasn’t included in the standard ACT-Watch questionnaire. There was also a question as to whether the data collected would be desegregated – for example, when someone received a cocktail of drugs with no anti-malarial, would we be able to determine where it came from? There was some discussion of the definition of “cocktail” – there are two different terms in Khmer “Khnam cheuk” - when it comes pre-packaged as a mix and “khnam sam” - when the pharmacist mixes it manually.

**Kinsy Hood, Clinton Health Access Initiative (CHAI)**

Public-Private Mix (PPM) – Facilitating Access to Diagnosis and Treatment

Ms Hood described the PPM as a supporting intervention of the Affordable Medicines Facility for malaria (AMFm) to overcome the lack of national routine collection of epidemiological data from the private sector, despite the fact that so many seek treatment from private providers. Additionally, it aims to facilitate better access to diagnosis and treatment (not specifically targeted at MMPs). The PPM project derives from work in two operational districts (ODs) that was started by PATH and scaled up due to the urgent need to monitor all sectors as part of anti-resistance efforts.

### *Objectives*

- Ensure counterfeit and monotherapies are not available
- All patients receive parasitological diagnosis
- Patients receive appropriate drug regimens
- Patients are referred according to the National Policy (signs of severe malaria or recurrent malaria, and all pregnant women and children under five years of age)
- Routine surveillance data are collected from private sector providers

### *Progress and Lessons Learned*

- Orientation of private providers to the program has been completed in 10 ODs
- Key barrier to use public providers was the expense of transport to public health service.
- Need for a method of tracking referrals such as mobile phone technology.
- By 2015 CNM will have oversight of PPM activities in 18 ODs in 10 provinces. PPM activities will be launched by PSI and URC to cover the other 8? ODs and provinces.
- Consistent supervision is important and can serve as an avenue for dissemination of important information to the private sector.
- Having a committed PPM team at the PHD/OD level is critical to success.

## **Discussion**

Discussion focused on the way that providers were selected to become part of the program. Ms Hood explained that they were selected by the PHD and OD partners, who are in contact with them. She mentioned the stipulation that they must be registered providers, and it is rare for any of them to drop out of the program once they had come to the orientation.

## **Final Discussion**

### *Defining MMPs*

The lack of clear definition for MMP came up throughout the day and has been raised in several workshops and meeting prior to this one. Dr Steven Bjorge from WHO suggested a means of classifying MMPs into sub-groups in order to conceptualise the population more clearly and to facilitate targeted strategies and project implementation.

See *Appendix2* for a table of proposed sub-categories.

It was generally agreed that these sub-categories are very helpful. Dr Guyant suggested that another level of information could run complementary to these categories to indicate time (daily, monthly, long-term) and space (geographical area). The possibility was raised of adding another layer to indicate whether these MMPs are coming from endemic or non-endemic areas.

### *Targeting MMPs from non-endemic areas*

The importance of targeting MMPs from non-endemic areas was agreed upon, since they are generally unaware of key malaria prevention, symptoms, and treatment information; they are not generally subjected to the same IEC/BCC campaigns as those in endemic areas.

There were three stages that MMPs could be reached on their journey:

1) Pre-departure:

This was generally agreed to be very difficult and required more brainstorming and research.

2) En-route:

It was suggested that IEC could reach MMPs in buses/taxis that are transporting these groups to endemic areas. However, questions were raised over the motivation of drivers to do so (as per the URC pilot of taxi drivers). Further, they should be able to procure a net before they reach the area, this would overcome the problem of them not being able to find a net on arrival. Buses and taxis could be given a stock to give away or sell at a small profit. A voucher system could be in place so that they purchase a subsidised net at a designated stopping point along the way to the endemic area. This approach is slated to be trialled as part of the URC-CAP malaria project in the near future.

3) Upon Arrival:

Different approaches to reach MMPs with BCC/IEC and ITNs were voiced: signs of where/how to find MMWs and that there are nets available in the village; making a forest package available for sale, which includes ITN, dipping chemicals and repellent. The importance of registering MMPs upon arrival was stressed, and reliable registration system would be the best method of reaching them.

### *Information collection at local level*

It was agreed that there is a need for a reliable system to collect MMP data at a local level to feed into the national system, to indicate how many bed nets are needed, increased demand for VMWs/MMWs, levels of RDTs and ACTs. There are several sources of information and a possible structure was suggested – MMWs/VMWs/VHSGs could assist the village chief and farm owners, and the commune chief could be responsible for overseeing registration while the district chief could be responsible for the data compilation.

### *Reaching MMPs who are linked*

Given the lack of extensive data on the location/numbers of MMPs, it was proposed that efforts need to be focused on reaching known/captive targets, ie those working for farm owners and private companies, such as plantations and developers. The LLIN lending scheme was deemed most appropriate for workers on farms, integrated with the local HC and MMWs/VMWs. The research and programs carried out by PSI were agreed to be an excellent method of engaging the private sector in prevention and treatment services. The problem may lie with companies in more sensitive areas such as land-clearing and hydro-dams, who are reluctant to allow access or engage in malaria campaigns due to privacy concerns.

Discussion closed with the acknowledgement that there are promising avenues to reach MMPs and targeted strategies to engage them in BCC/IEC and EDAT. However, there are still challenges in locating and mapping them consistently, to inform sustainable data collection and inform future strategies and campaigns.

Dr Siv spoke about the upcoming workshop on 19 and 20 June, which approximately 60 of the provincial health department stakeholders will attend. The purpose of the workshop will be to obtain their feedback and refine a strategy for the distribution of bed nets, which have already been distributed to ODs, in terms of the best way to reach out to MMPs in their provinces.

## Recommendations

### Knowledge gaps and potential strategies to fill them

The workshop revealed a number of interventions, which require further evidence to support their continued use or scale up, as well as knowledge gaps.

#### *Mapping MMPs and Malaria Activities*

There is still a need for a more effective information system to capture the movements of MMPs about the country. These patterns will enable the geographical targeting and timing of BCC and interventions, particularly those intended to increase pre-departure education. There is also a need for better mapping of malaria activities being carried out by government and partner agencies. This will reduce duplication of efforts and sub-optimal use of resources (both financial and human).

#### *IEC/BCC*

Pre-departure messaging is key but there is a lack of consensus regarding the best methods to find and target MMPs pre-departure. Projects that pilot the distribution of ITNs whilst MMPs are on their journey are also needed, in order to pre-empt problems with procurement upon arrival. Promising delivery methods, such as the tax-drivers scheme, need to be refined. Research is needed to identify sustainable ways to increase and maintain driver motivation to deliver messaging. Methods to reach MMPs who exist in 'media dark areas' are required, whether this is through strengthening the reach of MMWs, mobile phone- based strategies, or other innovative ways to deliver IEC/BCC.

#### *Resistance Mapping*

There is a need for a more effective resistance mapping and early warning system. Part of developing such a system will be finding methods to monitor treatment failures more successfully, that is, enabling better follow-up of patients. Zone 1 should be expanded to include Oddar Meanchey and surveillance in zone 2 and 3 needs to be intensified as areas of concern for the emergence of resistance.

#### *Ecological Change*

As large areas of Cambodia undergo land developments and ecological change, there is a continued need to research the effects of these changes on vector distribution, biting times and insecticide resistance.

#### *LLIN Loaning/Distribution Scheme*

The success of this scheme has been documented and its nation-wide scale-up is currently taking place as part of CNM's PPM roll-out. Qualitative research and cost-analysis studies are required, to establish the best method of making the program sustainable after funding of ITNs is withdrawn; farmers buying or bulk-buying and on-selling, increasing demand and ability for MMPs to purchase themselves etc. Also, new products such as repellents and treated clothing should be introduced to the scheme if research, that is currently underway, supports their efficacy and acceptability.

## General recommendations

### *Province-specific strategies*

Bearing in mind the regional differences in contexts, each province should have its own strategies; methods employed should be specifically created for each unique situation, or they should be previously piloted interventions, which have been tailored for the local context.

### *Multi-sectoral approach*

Given that the determinants of malaria knowledge and behaviour are multi-faceted in nature, it is important to establish and/or develop links with other relevant sectors. This would include partnering with stakeholders from agriculture, forestry and environment sectors from government and non-government agencies. It could also involve collaboration and information sharing with other sectors engaging with MMPs, such as human trafficking prevention organisations. Information gathered from these partnerships should be integrated into a multi-sectoral information system: providing multi-level data on the malaria situation, land development projects, mobile and migrant workers, meteorological data and other relevant information.

### *Nation-wide Strategies*

A co-ordinated effort is required to reach MMPs “From origin to destination and back”, including prevention, diagnosis and treatment interventions. Nation-wide mass media campaigns should continue, as well as more targeted ones for MMPs. Recruitment, training, up-skilling and monitoring of public health staff and volunteers should continue, as well as training of private distributors. It is important to utilise existing networks of VHV/VMW/VSHG and HCMC/CC for coordination, and implementation at community/health facility levels.

### *Engagement with the Private Sector*

It would be valuable to build on and expand the work completed by PSI to map the location of private companies who employ MMPs, and the number that they employ. PSI’s MOU agreement scheme and the PPM strategies of CNM should be expanded to engage as many plantation, factory and development companies as possible, allowing for opportunities to access the MMPs and collect useful data to feed into the national information system. Strategies to establish similar, mutually-beneficial, relationships with more sensitive sectors (hydro-electric and logging) should also be sought after.

## Action Plan

It is important to fill the knowledge gaps that have been identified in this workshop, however enough information and evidence is available to move forward. Experts from CNM and development partners agree that the best way to do this is to define sub-categories of MMPs and start to implement a package of strategies, according to what is most appropriate for each group.

## What Now?

On the 19<sup>th</sup> and 20<sup>th</sup> of June, 2012, representatives from almost all Provincial Health Departments will attend a meeting and workshop to discuss the recommendations raised in this report. They have been asked to contribute their local knowledge and expertise to tailor a proposed package of strategies to their specific provincial context. It is hoped that this process will not only lead to better intervention outcomes, but will also ensure the involvement and buy-in of local stakeholders, in turn leading to long term sustainability.

## References

1. World Health Organisation, *Global Plan for Artemisinin Resistance Containment (GPARC)*. 2011: Geneva. p. 56-57.
2. The Royal Government of Cambodia, *National Strategic Plan For Elimination of Malaria in Cambodia 2011-2025*. 2011: Phnom Penh.
3. BBC World Service Trust, *Malaria Survey 2009 - Knowledge, Attitudes, Practices and Media Information about Malaria*. 2010: Phnom Penh and London.

## **Workshop Minutes**

### **Information of MMP in malaria endemic areas (URC)**

General information on MMPs was presented:

Definition: *“Operationally, MMP refers to people who are not registered as local resident and are working/settling temporarily in a defined location, for instance mobile family, farm, plantation, construction site, mine exploration, etc.”*

The presenter ran through the different definitions of MMPs, as per the suggestions from Dr Steve Bjorge, which were circulated after the previous workshop on research related to MMPs in June 4<sup>th</sup>, 2012. Please see Appendix 1 of this report for the sub-categorisations.

The presenter showed some maps indicating the provinces that mobile workers often originate from (Kg Cham, Takeo, Phnom Penh, Pray Veng, Svay Rieng), and the areas they have reported travelling too (Pailin and Battambang). Estimates were shown, indicating that there were around 300,000 mobile workers in season 1 and 2 of 2011 in 4 districts of Pailin.

An overview of the URC LLIN lending scheme was given, and results presented. Over 6,500 nets have been distributed in 2011 already in 22 villages in Battambang and SPM ODs, with the aim of increasing MMP access to LLINs. The presenter also gave a brief overview of the taxi driver/bus system health education initiatives, which were initiated by URC. 13 bus companies and approximately 150 taxi drivers on key routes were selected to take part in providing IEC/BCC materials (flyers, stickers, audio tapes, DVDs) while en route to endemic areas. Mass media was also used – radio call-in shows and TV spots were produced.

Main recognised challenges presented by MMPs were:

- Hard to map and capture an accurate number of MMP
- It keeps changing the dynamic of mobile and migrant workers along the border areas
- Accessibility to mobile and migrant people
  - Poor route condition
  - Transport means
  - collaboration with new development projects
- Commitment of farm owners while other priority
- Indicators to measure intervention impact on MMP

## Discussion

Dr Sim asked the presenters from URC about their engagement with both registered and unregistered providers in the PPM. As the MoH policy states that unregistered providers are not allowed to operate, will they be covering unregistered providers from now on? Dr Sim also asked whether there was any incentive used, a mechanism to increase referrals from private to public in the PPM?

URC replied that they collaborated with local authorities and providers without any significant incentive – what happened was that when private providers joined the scheme they could attend monthly or quarterly visits, research trips etc. In terms of engaging with unregistered providers, URC will not longer be doing so – the initial motivation was because people like grocery store owners were selling drugs, so there was some desire to engage them in the referral process for the benefit of suspected malaria patients, for them to receive better care.

Dr Shafiq Muhammad from Malaria Consortium asked whether farm-owners involved in the lending scheme were also trained in communication skills? Also, how are URC keeping them motivated? And what evidence for scale-up is there for the taxi driver scheme?

URC replied that they do receive training on education and their motivation is good – feedback from the farm-owners indicates that they get more farm workers because the workers are attracted to work places where they receive the nets. So far there have only been rapid assessments of the taxi scheme, mystery clients etc.

Dr Sara Canavati from Malaria Consortium asked whether there has been any formal evaluations of the loaning scheme? Many NGOs seem to be scaling this up. If not then are they planning an evaluation?

URC commented that they have only done rapid assessments so far but it was acknowledged by the national malaria program as a key intervention, hence it is being scaled up.

### Net loaning scheme for seasonal agricultural workers in Pailin. (Sam Ossophea – FHI)

Sam Ossophea described the pilot lending scheme run by FHI in Pailin between June 2010 and May 2011. 490 nets were distributed to 10 landowners, which reached 800 families within the year (multiple use). The program has been scaled up for 2012 – so far 6,515 LLINs were lent to 391 farm/land owners in 46 villages in Pailin – 10,000 families are expected to benefit.

#### Results:

- Mean of duration of net use each time is 93 days
  - Maximum use each time is 202 days
  - Minimum use each time is 19 days
- Average frequent use of each net is 1.53
- 1,367 people had slept under the nets
- ONLY 5 LLINs were torn

- Majority of migrants borrowing LLIN were from:
  - Battambang 41%
  - Pursat 24%
  - Banteay Mean Chhuy: 8%
  - Other provinces 27%

#### Discussion and Conclusions:

- This approach is feasible to implement and demonstrated as possible solution to increase the coverage of LLINs among migrant population
- It demonstrated as cost efficiency as LLINs can be re-used by other next migrants
- Majority of LLINs which were loaned longer. It occurred in rubber plantation as most of them were stable or long term migrations
- Nets are required to develop a system to monitor and wash
- The farm owners supported the activity as it was seen as their social responsibility

#### Recommended adaptations for Scale-up:

- It is required to have collaboration among local authorities, village chiefs, HCs, MMWs – including lending and monitoring
- Map the farm/land-owners and farm-warehouses in target villages
- Conduct mosquito-nets need assessment—with farm-owners/families
- Develop and sign MOU between Farm Owners and implementing partners
- Need to develop a monitoring system and recording forms
- Transportation system of LLINs from province to target villages/farms
- Designation of a focal person to monitor the nets at farm and ensure the cleanliness when it is returned

#### **Fixed Schedule and mobile malaria clinics for forest workers in Pursat (Dr Srey Sophanaroth – CNM)**

Dr Srey Sophanaroth presented the results of a collaborative effort between CNM, WHO and the PHD in Pursat, to increase Active Case Detection (ACD) in Pursat province in October, 2011. The site selected was Veal Veang, based on its high risk status and number of people working in or very close to surrounding forests.

Team 1 was set up at 8 different check points, which MMPs use in the villages. Team 2 was tasked with locating and testing/treating MMPs in the forest (mobile teams travelling on motorbike).

#### Results of one month pilot:

- Villages: Of 361 people who received blood tests, 40 (11%) were positive for P(f) P(v) or mix. Prevalence was 0.96%.
- Mobile Check-point teams: Of 383 people who received blood tests, 127 (33%) were positive for P(f) P(v) or mix.

#### Conclusions and Recommendations:

- Good collaboration with the PHD was vital – a supportive letter from PHD facilitated local collaboration.
- Positive cases were treated early and at the site itself.
- ACD was highly productive and should be expanded, particularly in places where with high incidence of malaria that are located where wood-cutters stay or travel through.

## **Discussion**

Dr Sim reiterated the importance of bringing services to people who are involved in wood cutting - of establishing more of these mobile clinical teams.

Dr Philippe Guyant mentioned that it would be very interesting to have an idea of the cost of these sorts of pilot programs, to be able to consider scaling them up we need to know the financial and human resource cost and how much burden this reduced. ie cost effectiveness.

Dr Sim mentioned that if we compare two things 1) national program and 2) local group in Veal Veang. One person detected via the national program costs \$200, one person detected via these mobile teams costs \$50.

Michelle asked whether some recommendations could be given to PHD attendees at the conference. Were there operational challenges that should be taken into account if trying to replicate this program? Anything that would be done differently next time?

Dr Siv said that the purpose of this isn't to compare costs, it's impossible to compare on such a targeted program. What is important is to realise that these targeted initiatives are effective and that we can capture MMPs, we can narrow our strategies to help in containment.

Dr Sim outlined the advantage of ACD for district levels, which is much faster and less costly than FSAT, which requires samples to be sent to the Pasteur Institute, to be confirmed with PCR, and take 4-5 days for results. ACD is quicker and volunteers can be used to implement it.

## **Feedback of Workshop on Research Related to Mobile and Migrant Populations and Access to Diagnosis and Treatment (Dr Philippe Guyant – London School of Hygiene and Tropical Medicine)**

Dr Philippe Guyant presented a summary of the workshop on research related to MMPs, which was held at CNM on the 4<sup>th</sup> of June, 2012. He drew attention to the printed copies (in Khmer) which were in the information packets given to each of today's attendees.

A mix of government, local and international research institutions and development partners were present and the objectives of the day were:

- To identify research focused on mobile and migrant populations (MMPs) to share what has been done and where it was carried out in order to avoid duplication in the future.
- To highlight challenges and lessons learned during program implementation.

- To identify knowledge gaps and discuss potential research questions to fill these gaps.
- To inform strategy direction for reaching MMPs.

There were three main sessions on the day, which followed the themes:

- Session 1: Research projects conducted on mobile and migrant populations
- Session 2: Pilot projects and implementation of projects targeting mobile and migrant population
- Session 3: Research results and project implementation related to demand/access to treatment and drug use.

Please see the workshop report for a full list of presentations.

Knowledge gaps and potential strategies to fill them:

The workshop revealed a number of knowledge gaps as well as interventions, which require stronger evidence to support their continued use or scale up.

#### *Mapping MMPs and Malaria Activities*

There is still a need for a more effective information system to capture the movements of MMPs about the country. These patterns will enable the geographical targeting and timing of BCC and interventions, particularly those intended to increase pre-departure education. There is also a need for better mapping of malaria activities being carried out by government and partner agencies. This will reduce duplication of efforts and sub-optimal use of resources (both financial and human).

#### *IEC/BCC*

Pre-departure messaging is key but there is a lack of consensus regarding the best methods to find and target MMPs pre-departure. Projects that pilot the distribution of ITNs whilst MMPs are on their journey are also needed, in order to pre-empt problems with procurement upon arrival. Promising delivery methods, such as the tax-drivers scheme, need to be refined. Research is needed to identify sustainable ways to increase and maintain driver motivation to deliver messaging. Methods to reach MMPs who exist in 'media dark areas' are required, whether this is through strengthening the reach of MMWs, mobile phone- based strategies, or other innovative ways to deliver IEC/BCC.

#### *Resistance Mapping*

There is a need for a more effective resistance mapping and early warning system. Part of developing such a system will be finding methods to monitor treatment failures more successfully, that is, enabling better follow-up of patients. Zone 1 should be expanded to include Oddar Meanchey and surveillance in zone 2 and 3 needs to be intensified as areas of concern for the emergence of resistance.

#### *Ecological Change*

As large areas of Cambodia undergo land developments and ecological change, there is a continued need to research the effects of these changes on vector distribution, biting times and insecticide resistance.

### *LLIN Loaning/Distribution Scheme*

The success of this scheme has been documented and its nation-wide scale-up is currently taking place as part of CNM's PPM roll-out. Qualitative research and cost-analysis studies are required, to establish the best method of making the program sustainable after funding of ITNs is withdrawn; Farmers buying or bulk-buying and on-selling, increasing demand and ability for MMPs to purchase themselves etc. Also, new products such as repellents and treated clothing should be introduced to the scheme if research, that is currently underway, supports their efficacy and acceptability.

General recommendations:

### *Province-specific strategies*

Bearing in mind the regional differences in contexts, each province should have its own strategies; methods employed should be specifically created for each unique situation, or they should be previously piloted interventions, which have been tailored for the local context.

### *Multi-sectoral approach*

Given that the determinants of malaria knowledge and behaviour are multi-faceted in nature, it is important to establish and/or develop links with other relevant sectors. This would include partnering with stakeholders from agriculture, forestry and environment sectors from government and non-government agencies. It could also involve collaboration and information sharing with other sectors engaging with MMPs, such as human trafficking prevention organisations. Information gathered from these partnerships should be integrated into a multi-sectoral information system: providing multi-level data on the malaria situation, land development projects, mobile and migrant workers, meteorological data and other relevant information.

### *Nation-wide Strategies*

A co-ordinated effort is required to reach MMPs "From origin to destination and back", including prevention, diagnosis and treatment interventions. Nation-wide mass media campaigns should continue, as well as more targeted ones for MMPs. Recruitment, training, up-skilling and monitoring of public health staff and volunteers should continue, as well as training of private distributors. It is important to utilise existing networks of VHV/VMW/VSHG and HCMC/CC for coordination, and implementation at community/health facility levels.

### *Engagement with the Private Sector*

It would be valuable to build on and expand the work completed by PSI to map the location of private companies who employ MMPs, and the number that they employ. PSI's MOU agreement scheme and the PPM strategies of CNM should be expanded to engage as many plantation, factory and development companies as possible, allowing for opportunities to access the MMPs and collect useful data to feed into the national information system. Strategies to establish similar, mutually-beneficial, relationships with more sensitive sectors (hydro-electric and logging) should also be sought after.

Action Plan:

It is important to fill the knowledge gaps that have been identified in this workshop, however enough information and evidence is available to move forward. Experts from CNM and development partners agree that the best way to do this is to define sub-categories of MMPs and start to implement a package of strategies, according to what is most appropriate for each group.

After speaking about the workshop, Dr Guyant presented some slides giving different examples of frameworks for categorising MMPs according to their movements and behaviours, the majority of which are evolutions of Prothero's original work some decades ago. As the research workshop concluded, the more we know about the movements and timeframes of MMPs, the better able we will be to target the various groups with strategic interventions.

### **Discussion and Closing of Day 1 of Workshop**

Dr Chea Nguon (CNM) spoke about the importance of including these neglected populations in malaria strategy – although we still need better tracking systems and ways to reach them, we have enough knowledge to move forward. The loaning schemes and taxi IEC/BCC initiatives present good opportunities for outreach but as cases of malaria become fewer and donors start to reduce their funding there is a need to think of the most sustainable methods of malaria containment and elimination.

Dr Chea mentioned that His Excellency the Health Minister would be attending the second day of the workshop and that there will be some media there as well. He emphasised the need for all attendees to use what they have heard today in the group work sessions tomorrow to make sure that there are some immediate action strategies to be presented to His Excellency, and a clear strategy of how the 1.3 million bednets, which are now in storage, are going to be distributed.

Dr Chea Nguon ended day one of the workshop with thanks to all participants.

### **Challenges in malaria surveillance as Cambodia moves towards elimination (Dr Steve Bjorge – WHO)**

Dr Bjorge spoke about the challenges facing Cambodia to eliminate malaria in the stated 15 year timeframe. Elimination comes about by achieving the elimination of the malaria parasite, not the mosquito itself. Initially this will involve broader control efforts (ITNs, IRS, vector control) but as transmission decreases the effort required will be much more laborious - investigation of individual cases.

Steps to Take Now:

- Bednet coverage for every man, woman and child at risk of malaria
- Village Malaria Worker in every village at risk
  - Rapid diagnosis
  - Effective treatment
- Health centers and hospitals with good diagnosis and treatment

Further Steps:

- Investigation of malaria cases becomes very important.
  - Who gets malaria?
  - Where do they get the malaria?
  - How do they get malaria?
  - What are the risk factors?
- Actively look for other ways of controlling malaria in development projects (eg dam development, rubber plantations) - MMW, ITNs
- Health System strengthening at all levels
- Support from local levels is very important
- Building and strengthening local surveillance staff.
- Finding increasing local funds
  - Creative new ways of raising funds, such as malaria tax on tourists.
- Coordination of all relevant sectors
  - Public/private partnerships

## Discussion

Dr Guyant asked how Dr Bjorge foresees the end of transmission

Dr Bjorge replied that final elimination will take more than ITNs and VMWs – they are only part of the bigger picture. As socio-economic progress is made more generally, people will be able to take better care of their own health. We can look at population level factors – like the herd effect in vaccinations – we don't need 100% coverage of bed nets, if we work to the highest level attainable then that will be enough. P(v) will disappear more slowly because of its recurrent nature and multiple treatment needs, so after P(f) it will become the predominant problem.

Dr Arantxa Roca (MC) asked whether Dr Bjorge foresees a surveillance officer as a more integrated member of staff who will not only work on malaria but other cases? To which Dr Bjorge replied that, eventually, yes – as cases reduce then VMW time is freed to take on other duties. At the beginning there needs to be dedicated surveillance but over time their duties will diversify.

There was discussion of how Cambodia, with three bordering countries (forested borders) will be able to eliminate malaria. Dr Bjorge acknowledged that it would be a challenge, particularly as primary forest disappears and plantations increase, but Malaysia has seen excellent success control malaria despite similar circumstances.

## **Respondent Driven Sampling (RDS): An innovative method for surveying mobile migrants in Pailin and Pursat. (Dr Po Ly – CNM).**

Dr Po Ly described this study as one of the first in Cambodia to use Respondent Driven Sampling Methodology in order to overcome the inaccessible nature of many MMPs. Pramuoy Health Center and a VMW house in Chhay Louk village (both in Veal Veang - N=737) were selected as study sites, as well as 2 sites in Pailin (Andong2 and Pang Rolem -N=764). 8 “seeds” were selected to begin recruitment, the people

they found were then interviewed and given referral cards so that they too could recruit people and so on and so forth.

### Key Findings

	Pailin (n = 764)	Veal Veang (n = 737)
Percentage of the migrants that received health message (about malaria) in last 3 months	89%	94.5%
Source of health information:		
Family/Friends/neighbours	29.7%	57.7%
Radio	57.1%	23.5%
TV	31.3%	32.4%
Those who do not own an ITN:	N=509 (66.5%)	N=322 (43.7%)
Reason given:		
Do not need one	41.1%	23.2%
Do not know where to find one	26.4%	19.5%
Too expensive	25.0%	24.3%
No money to buy one	1.3%	20.4%

### Source of medicine (n= 115 in Pailin, n = 219 in Veal Veng)

(Respondents could choose more than one answer)

Dr Po Ly	Gov't hospital/clinic	<b>47.8</b>	<b>27.4</b>	also noted finding that respondents to return after working area. Hence, potential for transmit back to non-areas.
the	Private hospital/clinic	<b>21.7</b>	<b>36.7</b>	
91% of	NGO	1.7	0.0	
planned	Drug outlet	<b>11.3</b>	<b>20.0</b>	
home	Market stall/shop	0.9	4.2	
in the	Dispensary at work	0.9	0.5	Learned from
there is	VMW	<b>20.9</b>	<b>12.6</b>	
them to				
malaria				
endemic				
Lessons				
Field				
Implementation of RDS				

- Good collaboration with the local authorities in informing the community and organizing logistics for the study to run smoothly.
- Use of ID stickers ensured precise tracking of participants and their relations to one another.
- Frequent field supervision was important in motivating field teams and ensuring adherence to survey protocols.
- Excellent field management and local knowledge by CNM and its partners was essential to successful field work.
- Appropriate staffing, local networks (VMWs), site selection, seeds, and supervision.

## Discussion

Dr Bjorge highlighted the high number of people going to the public sector (at least half), which is very different from what is reported in other studies, and for the rest of Cambodia. Dr Po Ly replied that this could be because they are receiving from information.

There was some discussion of the methodology of the study. Q: How did they ensure that not only family members were recruited (no diversity)? A: The seeds were instructed to branch out as much as possible. Q: Did the respondents really understand the questions – was it really their opinion? If supervision is only provided at the beginning then surely efficacy is lost as the chain moves along? A: No, the recruitment happens via the seed but the respondents are always interviewed by a trained interviewer.

## Qualitative Research on MMP- an experience from Mae Sot (Thai-Myanmar border) – Dr Shafique Muhammad, Malaria Consortium

To be completed when slides received.

Dr Philippe Guyant gave instructions to the attendees about splitting into groups:

- Short term: by the end of 2012
- Long term: 2013-2015
- 4 thematic groups divided in sub-groups:
  - Prevention interventions
  - EDAT interventions
  - Surveillance
  - Research needs
- Groups: mix of government and NGOs

Groups worked together to achieve these goals and one person from each group gave a presentation of the results:

## Early Detection And Treatment (EDAT)

### Current Status

- Public Sector:
  - Radio Messages
  - Screening (Pailin/Pursaut)
  - Farm owners provide information to workers on VMW/MMWs
  - Outreach to migrants (ACD)
  - VMW/MMW support
  - Diagnosis and treatment at health facilities
  - Health facilities treat 24 hours per day, 7 days per week
  - Supply malaria treatment and materials
  - Referral to hospitals
  - Hospitals treat severe cases
  - Monitoring and supervision of VMW/MMW's
  - Health facilities provide trained human resources
- VMW/MMW
  - Diagnosis (RDT) and treatment
  - Provide education to MMP
  - DOTs (Pailin)
  - Referrals to health facilities
- Private Sector:
  - Provide education to Private Providers and patients
    - Messages: Test and Refer (Zone 1); Test, Treat, Refer (Zone 2/3)
  - Monitoring and supervision to private providers

#### *Gaps and Constraints*

- Stockouts (public and private sector)
- VMW not available 24/7
- Transportation from community to HC
- VMWs have confidence in abilities so do not always refer when needed
- Few Incentives for private providers
- No FDC ACT in private sector yet

#### *Short-term Interventions*

- Supply RDT/ACT
- Expand PPM (10 ODs by end of 2012)
- VMW have fixed schedule
- Quarterly mtgs with Private Providers to provider updates from CNM/MoH and to help motivate and gather feedback
- Additional incentives to private providers to encourage participation in program (ie. exchange visits, certificates, etc)

#### *Long-term Interventions*

- Steady supply of ACTs/RDTs

- Expand MMW program to more plantations/farms (technical, financial, human)
- Trained position at private companies to treat malaria and other diseases (technical, financial, human)
- Expand PPM to all endemic ODs (technical, financial, human)
- Use outcomes from PPM quarterly mtgs to support future interventions (technical, financial, human)
- Implement DOTs in all endemic ODs (technical, financial, human)
- SMS for private providers to report cases in real time (technical, financial, human)

#### *“Out of the Box” Suggestions*

- Extend Health facilities to more remote areas (HSS)
- Stand by treatment for MMP (pkg of intervention that can be self-administered)

### **Prevention Interventions**

#### *Short-term Interventions*

##### **Pre-departure**

- Through mass media (Radio, TV...etc)
- Through IEC materials such as billboard, leaflet displayed at public health facilities integrated with other programs (HIV, HPI..) in malaria areas
  - 1.Causes, 2. protecting materials 3. malaria areas, 4. malaria services

##### **Departure**

- Through mean of transportation
  - Taxi drivers, buses, worker trucks (slips, CD, Video CD malaria cards for receiving free malaria services at public health facilities)
- Through IEC materials such as billboards, posters, leaflet , audio visual materials in the public (restaurant, bus stations, public gathering...)

##### **Destination**

- Through public events in prioritized malaria areas
- Malaria education through village volunteers (VHVs, VMWs, MMWs...)
  - LLIN use
  - Seeking appropriate malaria services (HFs, VMWs, MMWs...)
- Billboard display at the main roads, gates
- IEC material distribution at gasoline station, café etc
- Special education through land registration teams (migrants).
- Through mobile video shows.

#### *Long-term Interventions*

- Through mass media (Radio, TV etc)
- Through IEC materials integrated with other programs (HIV, HPI..) in malaria areas countrywide

Themes of media and IEC:

- 1.Causes,
2. Protecting materials

3. Malaria areas,

4. Malaria services

- Through mean of transportation
  - Taxi drivers, buses (slips, CD, malaria cards for receiving free malaria services at public health facilities)
- Through IEC materials such as billboards, posters, leaflet in the public (restaurant, bus stations, public gathering...)
- Through public events in prioritized malaria areas
- Malaria education through village volunteers (VHVs, VMWs, MMWs...)
  - LLIN use
  - Seeking appropriate malaria services (HFs, VMWs, MMWs...)

#### *LLIN Distribution*

##### Pre-departure

- 1 LLIN, 1 LLIN should be distributed to each family where a majority of migrant families are reported.
- Bundle nets sold widely in the market

##### During departure:

no strategy

##### Destination

- Lending scheme (farm owners, company supervisors....)
- Free LLIN distribution through VMW/VHV/HCs
- LLIN distribution at border gates (for cross border migrants)
- **Long term:** farm owners, company have to buy LLINs for their workers (perhaps enforced with a minimum threshold of X number of workers employed)

## Discussion

Dr Siv highlighted the importance of reaching MMPs in non-endemic areas – this could be via mass media or ensuring that HCs in non-endemic areas also have information on malaria displayed. Additionally, there should be information at popular road-side food stalls and cafes to reach these people. Dr Siv also suggested that equity funds could be an avenue of providing free treatment and funds for transport and accommodation.

Dr Shafique Muhammad mentioned his experience in Myanmar – distribution didn't work when it was only HC staff responsible. The best was to engage teachers, monks, and other community members and to make them accountable. He encouraged PHDs to think about other stakeholders.

Dr Rashid (WHO) commented that we don't only need to get IEC materials to these MMPs but also ITNs and other protective equipment. He suggested some sort of stall set up at arrival destinations that would have a dual purpose 1) provision of nets/materials 2) data collection

## Surveillance

### *Current Status/Gaps/Challenges*

- No clear definitions of mobile and migrant workers (e.g. those who come for work in the farm, those who come to clear land, etc)
- Different patterns/challenges according to the type of migrant
- Malaria risk differs among MMP: lack of information on who is at highest risk
- Different migrant populations seen between provinces (flexibility)
- Different strategies used:
  - Nets lent to mobile workers through the lending scheme (more difficult to reach them and properly follow them up)
  - Nets given to the migrant population
  - But some temporary migrants do not received any nets (not residents, current practice differ in this group)
- Need to collect information on migrant patterns:
  - Through village chief using existing mechanisms and perhaps existing VMW/MMW. Form to be developed

### *Short-term Interventions*

- Clear definition/interventions for mobile and migrant populations
- Identify clear feasible surveillance approach for MMP working in the farm and MMP working in the forest
- Current/potential surveillance activities:
  - In Farm: MMW to work with MMP working in farms- need to update the reporting form. If MMW in farm, system can be easily implemented, if not, need to identify responsible person to collect/report data
  - In Forest: no clear strategies. Identify companies working in the forest.
- Need to identify/prioritise MMP at highest risk to focus intervention/surveillance systems

### *Long-term Interventions*

- To support these activities more financial and human resources are needed: e.g. forest (ACD/mobile FSAT, etc)
- With regular updates:
  - Mapping of hotspots
- Need to track progress of interventions, monitor resistance (identify ways of monitoring, supervising data quality, establishing response systems, etc).
- Emphasize the surveillance to ensure we capture mortality to provide evidence of 2015 no malaria deaths targets

### *“Out of the box” Suggestions*

- Try to mobilize small resources to do a quick/small pilot based (e.g. testing surveillance forms, assessing possible D3/D28 surveillance systems, etc) on recommendations from short-term suggestions

- Learn from DO system being implemented in Pailin to follow up MMP appropriately (if migrant identified at Health Centre, etc)
- Potentially collect patient phone number to follow up by phone in case follow up not possible? Request them to come back after treatment (but requires incentives, etc).

## Discussion

There was a discussion centred on using VMWs more to collect information on MMPs, not necessarily health status but just when new settlements set up, movements etc. They are generally the most tapped into what is happening in the community. Perhaps this could be added to the reporting forms currently in use. Although, it was pointed out that there are not VMWs in every village and they are very focused on malaria so the village or commune chief might need to be responsible for gathering this information – or at least prompting it from the VMWs.

## Research Needs

### *Prevention - Questions that can be answered in the Short-term*

#### Package 1: Human

- Sustainability: How to maintain and increase motivation (proved to be related to performance)?  
– Look at other factors that can contribute to motivation besides financial incentives.

#### Package 2: BCC/media

- What is the best communication (HE) tool for reaching migrants?
- Is mass media more effective than interpersonal communication?

#### Package 3: Protection

- Do we need additional tools to ensure better protection among migrants?
- Which tools should be targeted at the specific migrant categories? i.e. ITM, loaning scheme? Should target all migrants or only plantations and farms, etc.

### *Prevention - Questions that can be answered in the Long-term*

1. What is the point in time for providing information and protection tools for migrants? (pre-departure/on the way/upon arrival?)
2. How to track imported cases among migrants? Mapping where do migrants get malaria from? Not at the place of reporting but the place of infection.

### *EDAT - Questions that can be answered in the Short-term and Long-term*

- Stock-outs: How to address the issue of stock outs?
- Referral system: How can mobile and migrants access referral system for MMPs: private? MMWs? PPM?
- Access:
  - How to improve access to treatment for MMPs
  - How to shorten the time of accessing treatment (disease progression)?

- Migrants access to treatment locally vs going back home?
- Stand by treatment: Could it be used and recommended in Cambodia? How to provide proper HE in order for people to test themselves and treat?—for migrants who are too far away from health services.

#### *Surveillance - Questions that can be answered in the Short-term and Long-term*

- 1) Introduction of Malarone for first line treatment in Pailin—28 day follow-up
  - What is the feasibility of the above for VMWs and HF staff in terms follow up for MMPs?
  - Is there any potential for scaling up?
- 2) What is the best way to conduct **death case audit** for malaria for MMPs?
- 3) How to integrate malaria surveillance into the RRT?—especially in the long term in terms of malaria elimination?
- 4) How to scale up the SMS for MMPs? How to integrate the SMS into the RRT in order to target MMPs?
- 5) How to do malaria prevalence surveys among MMPs? What would be the best methodology? (no data available)
- 6) Could we do D3 positive surveillance among MMPs?

#### *Inter-sectoral Approach - Questions that can be answered in the Short-term and Long-term*

- How can government departments, private companies, civil society working with migrants be further developed?
- What is the best way to deal with MMPs in terms of an inter-sectoral approach for malaria elimination? – existing networks that have information on migrants.

### **Summary of the Workshop – Dr Char Meng Chuor (Director of CNM)**

Dr Char Meng Chuor gave a brief overview of the workshop – organised by CNM and supported by WHO and LSHTM. The workshop was attended by 82 participants from 10 ODs. Dr Char Meng detailed the seven main objectives of the containment project and mentioned that there were productive discussions involving their outcomes and challenges as well as discussions on how to distribute the 1.3 million bed nets, which are in storage at the moment. The Director emphasised the importance of reporting, keeping evidence of payments and receipts for the long term for auditing and transparency purposes. He mentioned that many of the issues and questions raised in the workshop would be discussed in the following week with a specialised group of CNM and experts.

The Director requested the continued support of donors and development partners, and thanked all organisers and participants at the workshop.

### **Closing Ceremony – His Excellency Dr Mam Bunheng, Minister of Health.**

H.E Dr Mam expressed his great pleasure and honour, on behalf of the Ministry of Health, to be able to preside over the closing ceremony of the workshop on the dissemination of results from the Containment Project and research agenda relating to mobile and migrant populations. His Excellency explained that malaria is a priority disease in Cambodia for the Ministry of Health and that it is problematic, particularly for

women and children, but preventable through education and personal behaviours such as sleeping under a net. Controlling malaria amongst mobile and migrant populations is a particular issue, due to the fact that they often travel from non-endemic to endemic areas of the country.

His Excellency voiced his support, under the leadership of the Prime Minister, for the national malaria strategy 2011-2025, which is in line with global strategies and outlines the interventions that need to be taken to reduce resistance to anti-malarials and to reduce the burden of the disease.

His Excellency outlined some of the challenges of MMPs, the difficulty of access to those working in construction sites, rubber plantations and power dams. BCC is still necessary as there is limited knowledge in some areas – efforts need to be made to advise of correct usage (not using ITNs as fishing nets) and protection measures when people are out in key biting times or have just moved from another part of the country to new surroundings.

His Excellency spoke of the achievement of having 2.7 million nets distributed so far, with another 1.3 million on their way to those who still need them, particularly in endemic areas and amongst MMPs. He spoke of the voluntary groups that are currently educating each other, and the need to collaborate more with plantation owners, and also to make sure that we have a contract with these land owners and correct documentation is kept.

His Excellency encouraged the attendees to support the strategic goal of elimination by 2025 – to make sure that they are doing the right thing at Provincial levels and taking on the responsibility they have been given, to be accountable as the ones who are distributing nets. His Excellency explained that we must work together to learn and improve strategies; we have committed to donors and the government to maintain transparency in doing so. Good work has been done and for this His Excellency thanked CNM and partners for their efforts.

His Excellency listed some of the ways forward from here; to work harder and more effectively; to ensure transparency; to collaborate with donors and partners; to ensure surveillance and tracking deaths; to research and disseminate results; to eliminate parasites that are resistant to anti-malarials; to eliminate fake malaria medication – which has already been mostly achieved. His Excellency stated that he hoped the Cambodian people would change their behaviours to reduce the incidence of malaria.

In conclusion, His Excellency expressed his hope that the workshop had produced some good discussions, knowledge exchanges and collaborative partnerships for the sake of the Cambodian people. He thanked the development partners for the technical, financial and material support. He believes that donors will continue to support national efforts to totally eliminate malaria in Cambodia by 2025. His Excellency also thanked all attendees from other provinces, and urged them to go out into the field to see what is happening in their areas.

His Excellency officially concluded the workshop.