

**Proceedings from the Workshop on Monitoring and Evaluation (M&E) Indicators for the
Bill & Melinda Gates supported project: “A Strategy for the Containment of Artemisinin
resistant Malaria Parasites in Southeast Asia”**

**Phnom Penh Hotel
Phnom Penh, Cambodia
4 – 6 February 2009**



Introduction:

Recent evidence from limited studies has suggested that artemisinin resistant *Plasmodium falciparum* parasites are present on the Thai-Cambodian border. The spread of artemisinin resistance, if confirmed, through Asia to Africa, would be a catastrophic setback to global efforts to control malaria. As an emergency project, the Bill and Melinda Gates Foundation is supporting the “Strategy to contain artemisinin resistant malaria parasites in Southeast Asia” through the World Health Organization (WHO), the National Malaria Control Programmes, and other relevant partners.

This meeting is the first of four technical meetings to be organized by the Malaria Consortium, a UK-based international non-governmental organization, which will lead in collaboration with WHO the overall coordination of monitoring and evaluation activities, provide human resource support, engage in the support of operations research activities, and provide overall technical advisory support to the Project.

This inter-country workshop brought together programme staff from Cambodia’s National Malaria Programme (CNM) and Thailand’s Bureau of Vector-borne diseases (BVBD), including representatives from the University Research Co (URC), USAID, Pasteur Institute, and Mahidol University’s BIOPHICS Unit and Geographical Information Unit (GIU). It should be noted that representatives from the 10 border provinces in Cambodia and 3 provinces in Thailand were also in attendance to provide useful feedback from the provincial level. The agenda for the workshop and list of the participants are indicated in Annexes 1 and 2, respectively.

Objectives:

- To reach consensus on the M&E framework (process, outcome, and impact indicators) for the Containment Project
- To align (e.g. identification of overlaps and gaps) containment Project and National Malaria Programme indicators
- To agree on the reporting mechanisms to ensure timely reporting of information needed at all levels

Opening Remarks and Welcome – Dr. Joel Vanderburg

Dr Vanderburg welcomed the participants to the M&E Indicators workshop for the Containment Project. He emphasized that this project is an emergency project which is complex covering a large area and crosses the borders of two countries. The reason for doing this is not only to ensure the health of the people in the target areas in Cambodia and Thailand but the health of many thousands around the world who will be affected if artemisinin resistance spreads. The project could also provide a template for others to follow in the process of eliminating malaria.

Because of the global implications of this project, monitoring and evaluation will be especially important to ensure that objectives are on course. This meeting is important as it brings two different countries together to improve cross-border communication.

Welcome from Dr. Duong Socheat

Dr Socheat welcomed all the participants and thanked Dr Wichai Satimai and his team from Thailand for their participation in the meeting. He emphasized that cross-border collaboration between the two countries will be important for the success of the Containment Project. He also explained that many meetings, including a recent meeting of provincial health directors and staff from all 10 provinces in Cambodia, had already been held to discuss implementation. Many

tasks have been identified as needing further attention including human resource strengthening and addressing private sector issues.

Indicators for monitoring and evaluation (Process, Outcome, and Impact) – Dr. David Sintasath

David briefly summarized the main aspects of monitoring and evaluation, including:

- What is M&E?
- Why do we need it?
- How do we achieve it?
- What are characteristics of a good indicator?

He also described the differences between monitoring and evaluation and that indicators should be SMART (Specific, Measurable, Achievable, Relevant, and Time-bound). Indicators should be developed through consensus, and targets should be achievable.

PROCESS INDICATORS: PLANNED ACTIVITIES, PROCESS INDICATORS AND MILESTONES (1ST YEAR)

CAMBODIA – Mr. Top Sophornarant

Mr. Top Sophornarant described the 7 objectives of the Containment Project, and the planned activities and timetable of the National Malaria Programme.

Comments/Discussion:

- Dr Sim Kheng clarified that these activities described were detailed action plans for the programme rather than indicators.
- Dr Charles Delacollette asked who, how and what will be reported from the district/provincial levels. Dr Sim clarified that targets, plan, and budgets have already been set for the provinces, and that they will report the activities to CNM. There is a malaria control department in each province which extracts monthly malaria morbidity data from the general morbidity data sent by the health facilities.
- For proper monitoring and evaluation, CNM needs to verify population statistics for each province, collect comprehensive records of number, location, and type of malaria cases.
- Dr Sim reported some outstanding issues including shortage of lab technicians, a lack of a fully functioning QC system, and inadequate supplies of RDTs to VHWs. Supervision is also restricted due to insufficient human resources and vehicles.

THAILAND – Dr. Wichai Satimai

Dr Wichai reminded the participants that the Containment Project is one of many projects within the Malaria Control Programme activities, which are often linked to activities funded by different donors. As a result, it will be difficult to attribute outcomes directly to the funds obtained from the BMGF. For example, malaria post workers, who are already funded by the Global Fund, will have increased activities including training extra staff and the development of new guidelines for the Containment Project. The Containment Project will need good collaboration between BVBD and the 7 provinces and districts of Thailand. Detailed activities related to the 7 objectives were explained, but Dr Wichai emphasized that implementation of the project will depend on WHO procurement of commodities. Dr Wichai also stressed the importance of cross border cooperation meetings which will need to be held regularly.

Comments/Discussion:

- Specific reporting formats from the districts/provinces to the national level may need to be developed to capture specific data for monitoring and evaluation.
- Dr Charles Delacollette reminded participants that where the project covers joint activities (e.g., IEC/BCC), the two countries and partners need to work together with provincial and district authorities to enhance collaboration at all levels. Country plans actually include specific budget dedicated to cover cross border meetings and activities and translators at provincial and district level will be made available throughout project implementation to ensure proper communication between Thai and Cambodian staff.
- Dr Wichai added that the National Task Force of Thailand (first meeting on Jan22) has already raised the need of a system for follow up of patients who cross border, as the case management (e.g. proposed ACTs within the containment project) is quite different between the two countries.

BIOPHICS – Dr. Jaranit Kaewkungwal and Mr. Amnat Khamsiriwatchara

Dr Jaranit explained that BIOPHICS aims to assist the MOPH to develop technology for mobile surveillance system to map cases using passive detection, active case investigation, and mass screening. Using new technologies, such as smart or mobile phones, would be useful for case investigation, follow up and reporting at village level even in remote areas of the country. Mr Amnat described this proof of concept study currently in 2 districts in Thailand. He demonstrated that malaria case data could be accessed in real-time and how it can be progressively used in both countries for active case surveillance.

Comments/Discussion:

- The issue of protection of patient confidentiality was discussed and required further evaluation.
- Charles made point of including Khmer, Thai and English into the database now. It will also be important to have the system able to provide feedback to village/district/provincial levels and to fully involve district and provincial teams as system managers (ownership and sustainability) at planning stage of project implementation.
- VMW workers will be essential in this surveillance system. In Thailand, VMW receive \$80/month, but in Cambodia, they are volunteers at less than USD 10/month. This extra work for Cambodian VMWs may be difficult to accommodate without extra support.
- It was noted that better surveillance will be required as the number of cases continue to decline in the region, and it will be more and more challenging to find the last remaining cases.

MALARIA CONSORTIUM – Dr. David Sintasath

David presented the work plans and activities which will be managed by the Malaria Consortium in the first year, including human resource support (e.g., epidemiologist, data manager, BCC/IEC specialist, and field officer), four technical meetings, household/outlet surveys, and overall coordination of M&E activities.

Comment/Discussion:

- The point was made that surveys provide point-in-time information, data collection lengthy, and analysis delayed. Rapid assessments were suggested to be conducted at the beginning of the project to assess what information is already available and what are the gaps.
- Information from other sources, such as the surveys conducted by CNM, Cambodia Malaria Surveys of 2004 and 2007, planned nationwide Global Fund surveys in 2009-2010, and others may provide useful baseline information for monitoring and evaluation.

- **As much as possible, making indicators part of the routine reporting system rather than through additional surveys**

OUTCOME INDICATORS: IDENTIFYING OVERLAPS AND GAPS WITH NATIONAL PROGRAMME INDICATORS

Proposed Outcome Indicators and Critical Milestones of the Containment Project – Dr. David Sintasath

David presented the M&E Framework (including their assumptions) for each objective, and the need to examine the gaps and overlaps of information required for each indicator.

Comments/Discussion:

- Some participants raised concerns about the overly ambitious targets set in the M&E framework. But it was pointed out that this was an **exceptional project** which requires **ambitious short-time targets** in order to achieve our main objective of containment of artemisinin resistant malaria parasites.
- It was agreed that some indicators may be difficult to report on as they are have presented; however, one of the main objectives of this meeting was to refine these indicators into a workable form.
- Some indicators may be difficult to accomplish in such a short two-year project, such as behavior changes.

Country Group Work: Identifying overlaps and gaps

This 2-year Containment Project has high ambitions and further funding may be required to fully achieve the objectives. Some of the participants expressed concerns that targets of 100% would be impossible to achieve.

All the indicators are part of the technical proposal to BMGF so the essence of the indicators should not be changed – but they can be refined and further clarified. Inputs from the provincial staff will be very important as to understanding and feasibility of the proposed indicators. Disaggregation of data specific to the Containment Project may be difficult for country programmes to obtain, but well-thought out monitoring and evaluation may help to overcome this problem.

Participants were divided into three groups: 2 from Cambodia and 1 from Thailand. The outputs from the groups are summarized in Annex. The groups were asked to look at the indicators to 1) identify what routine data is already being collected, 2) indicate where the gaps are, and 3) suggest where specialized surveys may be required to obtain such information. During the group work, it was suggested that the M&E framework lacked a column for assumptions and tools required for data collection.

It should be noted that Objective 6 was not discussed at length because those who are responsible to implement objective 6 activities were not there and because participants felt that they did not have the expertise to make constructive comments on the research programme and indicators.

A summary of the gaps and overlaps are included in the M&E Framework (see Annex 3). Relevant comments from the participants have been incorporated into the table.

Additional Comments/Discussion:

- In general, there are existing data and information from the national programmes which overlap with the Containment indicators, but some of these will need to be disaggregated from the general programme data.
- Data for indicators related to mobile populations are scattered, and may not be available at the central levels. More systematic data collection may be required through the routine surveillance system and/or specialized surveys. Cross-border data and information should be progressively harmonized and used for multi-country action.
- Different treatment regimes are proposed for Thailand (Atovaquone-proguanil, 3 days + PQ in zone 1 and AS+M+PQ countrywide outside zone 1) and Cambodia (DHA-PIP in Z1 and AS+M in Z2). This will make follow-up of mobile patients complicated within countries, but particularly difficult for cross-border migrants.
- Private sector: The public/private strategy is not yet clear in Cambodia, and there is an urgent need to address this issue.

Group Work: Critical review of OUTCOME and IMPACT indicators

The participants were divided into four groups, which comprised of a mixture both Cambodian and Thai participants: Group 1 (Objectives 1 & 2), Group 2 (Objectives 3 & 4), Group 3 (Objective 5), and Group 4 (Objective 7 and Impact Indicators). The tasks for each group were: 1) to propose Operational definitions for each indicator of their assigned objectives, 2) to discuss how and where do we obtain the data for these indicators, 3) to discuss whether there are existing baseline data available and how do we obtain it, and 4) the mechanisms of reporting and information flow. Group discussions were active, cordial, and productive. For both countries, available baseline information and data sources were identified for each indicator (Annex 3).

Key Comments/Discussion:

- Measuring the Impact Indicator “Artemisinin efficacy in Cambodia and Thailand revert to high levels prior to reports of tolerance: In Cambodia, % parasite positive patients on day 3 among Pf infected patients treated with ACT by DOT in Zone 1 decreased from baseline of 10% to <2% by 2010 and zero by 2015 (in Zone 2 remaining below 2%)” was discussed. The issue relates to the fact that as the number of parasite positive cases (denominator) declines through successful implementation of Containment Project activities, the overall proportion of parasite positive patients on D3 (numerator) may also decline. Thus, it will be difficult to measure impact numerically through this indicator. It was decided that this indicator may need to be further referred for high level expert consultations.
- Indicator 1.3 was discussed at length, and the participants felt that the wording should be revised to clarify its intended meaning: “100% of health centers and hospitals are fully functioning in Zone 1 by end of 2010”. In Cambodia, current health care coverage (not talking about performance) is only 40%, and to reach full coverage by 2020 will be a challenging task. Despite this, for the Containment Project in Z1, the aim is to have all health facilities fully functioning (health facilities are open 24 hours with diagnosis and treatment available). An important assumption is made that people have financial and geographical access to performing health care facilities.
- Indicator 2.3: “In Cambodia, a public/private mix strategy is piloted in Zone 2 by end of 2009, with provider certification and collection of surveillance data.” Much discussion centered around what the exact nature of public/private mix strategy, especially in Z1 and Z2 where sale of antimalarials in the private sector is going to be regulated. Reference to be made also to the PPM informal consultation in PP in October 08, report now in circulation.

Next steps and Recommendations:

- Following review of the indicators, next steps required for each indicator were suggested by the participants, and these have been included in the M&E Framework (Annex 3). One of the important suggestions was the need to include operational definitions for each indicator for clarity / common understanding.
- Although there is a general consensus on the indicators for the Containment Project, there are some indicators which need to be further refined and better articulated, including the first impact indicator which will require further technical deliberations.
- The issue of how to address mobile/migrant populations in the containment strategy was discussed. There is a significant gap of information for these mobile/migrant populations, and we need to identify other groups (including NGOs and organizations) who are working in this area. It will be important to discuss these issues and to develop a working framework at the technical meeting on migrant populations for the Containment Project. WHO MMP is responsible with the MC on this issue with a working group to be established first in Thailand in March with 6-month external TA under recruitment to prepare an in-depth situation analysis before September 09.
- It is evident that there are some data gaps in the M&E framework, but this workshop has helped to identify potential data sources to help fill these gaps and has highlighted the need to assess what information is already out there.
- There is a need to examine existing communication systems whereby exchanges of information can happen more efficiently at all levels including between concerned districts and provinces. This will be especially relevant for exchange of information and data for action (investigation of positive cases both sites) between Cambodia and Thailand.

ANNEX 1. Workshop Agenda

Workshop on Monitoring and Evaluation (M&E) Indicators for the Bill & Melinda Gates supported project: “A Strategy for the Containment of Artemisinin resistant Malaria Parasites in Southeast Asia”

Phnom Penh Hotel, Phnom Penh, Cambodia
4 – 6 February 2009

AGENDA

Objectives:

- To reach consensus on the M&E framework (process, outcome, and impact indicators) for the Containment Project
 - To align (e.g. identification of overlaps and gaps) containment Project and National Malaria Programme indicators
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Wednesday 4 February 2009

08:30 – 08:45	Opening remarks and welcome	Dr. Joel Vanderburg
08:45 – 09:00	Introduction of participants	
09:00 – 09:20	Indicators for monitoring and evaluation (Process, Outcome, and Impact)	Dr. David Sintasath
PROCESS INDICATORS: Planned Activities, Process Indicators and Milestones (1st year) (20 min + discussion)		
09:20 – 9:50	Cambodia	Mr. Top Sophornarant
9:50 – 10:20	Thailand	Dr. Wichai Satimai
10:20 – 10:40	Tea Break	
10:40 – 11:10	BIOPHICS	Dr. Jaranit Kaewkungwal
11:10 – 11:40	Malaria Consortium	Dr. David Sintasath
11:40 – 13:00	LUNCH	

OUTCOME INDICATORS: Identifying Overlaps and Gaps with National Programme Indicators

13:00 – 13:40	Proposed OUTCOME indicators and Critical milestones of the Containment Project	Dr. David Sintasath
13:40 – 15:00	Country Group Work: Identifying overlaps and gaps (by objective)	
15:00 – 15:20	Tea Break	
15:20 – 16:00	Thailand	Group rapporteurs
16:00 – 16:40	Cambodia	Group rapporteurs

Thursday 5 February 2009

08:30 – 08:45	Review of 1 st day	
08:45 – 10:30	Group Work: Critical review of OUTCOME and IMPACT indicators (by objective):	
	<ul style="list-style-type: none"> - Practicability, usability, and measurability - Data sources, data collections (how), responsible individuals - Feasibility at district, province, national levels - Targets and baseline - Data analysis (how) - Mechanisms of reporting (detailed), data consolidation, and surveillance systems at provincial and central level 	
10:30 – 11:00	Tea Break	
11:00 – 12:00	Group 1 (Objectives 1 & 2) Presentation & discussion	
12:00 – 1:30	Lunch	
1:30 – 2:30	Group 2 (Objectives 3 & 4) Presentation & discussion	
2:30 – 3:30	Group 3 (Objectives 5 & 6) Presentation & discussion	
3:30 – 4:00	Tea Break	
4:00 – 5:00	Group 4 (Objectives 7 +) Presentation & discussion	

Friday 6 February 2009

9:00 – 10:30	Presentation of finalized and agreed indicators & discussion	
10:30 – 11:00	Tea Break	
11:00 – 12:30	NEXT URGENT STEPS	

- what is needed to improve data management at peripheral and provincial and central levels
- roles and responsibilities
- plans of action
- integration with existing surveillance systems

Wrap-up and closing

ANNEX 2. LIST OF PARTICIPANTS

Cambodia

1. Dr. Duong Socheat (CNM)
2. Dr. Kheng Sim (CNM)
3. Mr. Chea Ngoun (CNM)
4. Mr. Top Sophornarant (CNM)
5. Dr. Siv Sovannaroth (CNM)
6. Mr. Ouk Vithiea (Provincial Malaria Supervisor – Battambang)
7. Mr. Hong Ly (PMS – Pursat)
8. Mr. Khourn Pong (PMS – Oddormeanchey)
9. Mr. Meas Sam On (PMS – Preah Vihear)
10. Mr. Preab Saroth (PMS – Kampot)
11. Mr. Yok Sovann (PMS – Pailin)
12. Mr. Mak Kimly (PMS – Koh Kong)
13. Mr. Keo Sopheaktra (PMS – Banteaymeanchey)
14. Mr. Sam Chheng (PMS – Siem Reap)
15. Ms. Nora Petty (Clinton Foundation)
16. Dr. Seshu Babu
17. Dr. Muth Sinuon

Thailand

18. Dr. Wichai Satimai (BVBD, Thailand)
19. Dr. Prayuth Sudathip (BVBD, Thailand)
20. Ms. Rungrawee Thipmontree (BVBD, Thailand)
21. Mr. Yuthana Pranuch (Chonburi province)
22. Mr. Dokrak Tongkong (Trat Province)
23. Mr. Vorasit Lailang (Ubon Ratchatani Province)
24. Dr. Jaranit Kaewkungwal (BIOPHICS)
25. Mr. Amnat Khamsiriwatchara (BIOPHICS)

WHO

26. Dr. Eva Maria Christophel, WPRO Manila
27. Dr. Charles Delacollette, MMP Bangkok
28. Dr. Abdul Rashid, WCO Cambodia
29. Dr. Joel Vanderburg, WHO Project coordinator, WCO Cambodia

USAID

30. Dr. Chansuda Wongsrichanalai

URC

31. Dr. Kheang Soy Ty
32. Dr. Ros Seyha

Pasteur Institute

33. Dr. Frederic Arieu

Malaria Consortium

34. Dr. David Sintasath

35. Dr. Prudence Hamade

Translators

36. Mr. Kun Ratana

37. Mr. Yin Soeum

Annex 3. Monitoring and Evaluation Framework

#	Goal/Objectives	Indicators for success	Clarification of Terms	Baseline Available?	Identified Gaps in Baseline	Target 2009	Target 2010	Data Source(s)	Frequency/ Method of data collection	Next steps	Assumptions
1	Project Goal: To contain artemisinin-resistant Pf parasites by removing selection pressure and reducing and ultimately eliminating Pf malaria	1. Artemisinin efficacy in Cambodia and Thailand revert to high levels prior to reports of tolerance: In Cambodia, % parasite positive patients on day 3 among Pf infected patients treated with ACT by DOT in Zone 1 decreased from baseline of 10% to <2% by 2010 and zero by 2015 (in Zone 2 remaining below 2%)		Sentinel surveillance sites (~10%)	Note: as the number of parasite positive cases (denominator) declines, the overall proportion of parasite positive patients on D3 (numerator) may also decline		<2%	Regional artemisinin tolerance surveillance data; drug efficacy data from routine sentinel sites; routine case follow-up in all malaria endemic areas; active case investigation of day3 positive patients at community level	Annual	Look at in vivo studies; check baseline; refer this indicator for expert consultations	
2		2. Malaria incidence and prevalence rates in Zone 1 Cambodia and Thailand continue to decline from current low rates towards elimination in 2015 (by 2010 reaching pre-elimination target of <1/1,000 Zone 1 population)		CAM: In Pailin, estimates of 25/1000 confirmed cases (HIS); THA: YES	CAM: baseline should be 2009 data which will include community data to be comparable;	TBD	TBD	Incidence data from strengthened surveillance system; prevalence data from mass screening and other population surveys; sero-prevalence surveys	Annual (or survey)	Need baseline data; need to determine which diagnostic; seasonality; targets set may be different for each country	
3	Objective 1: To eliminate artemisinin tolerant parasites by detecting all malaria cases in target areas and ensuring effective treatment and gametocyte clearance	1.1 At least 95% of Pf malaria treatments in the target zones by public, community and recognized private providers are parasite-based diagnosis by the end of 2010 and beyond	Parasite-based diagnosis = microscopy, RDTs or PCR; Recognized private providers are those who are certified	THA: YES CAM: YES	THA: need data from private sector (minimal); CAM: data needs to be disaggregated for Z1 and Z2; baseline from private sector incomplete	50%	95%	Thai: Monthly reports to VBDC from hospitals/ malaria posts; CAM: HIS, community/VMW reports; Private sector: possible reports from URC/PSI	Monthly	THA: survey on private sector; CAM: Update case report forms; Include question in private sector survey relating to diagnosis of Pf cases	
4		1.2 90% symptomatic Pf cases effectively treated according to Zone protocol in public and private sector by end of 2009 and beyond	Effectively = treated with correct antimalarial	THA: YES CAM: YES	THA: need data from private sector (minimal); CAM: data needs to be disaggregated for Z1 and Z2; baseline from private sector incomplete	90%	100%	Thai: Monthly reports to VBDC from hospitals/malaria posts; CAM: HIS, community/VMW reports; Private sector: possible reports from URC/PSI	Weekly/ Monthly	THA: survey on private sector; CAM: Update case report forms; Include question in private sector survey relating to diagnosis of Pf cases	

#	Goal/Objectives	Indicators for success	Clarification of Terms	Baseline Available?	Identified Gaps in Baseline	Target 2009	Target 2010	Data Source(s)	Frequency/ Method of data collection	Next steps	Assumptions
5		1.3 100% of health centers and hospitals are fully functioning in Zone 1 by end of 2010	Fully functioning = open 24hrs, diagnostics, treatment available	CAM: 23 public health centers to be fully functioning; THA: need number of HCs/hospitals	CAM/THA: need to develop way to capture information about whether health centers are functioning	80%	100%	Supervision visits; exit interviews; household survey	Survey	Develop routine reporting system	People have financial and geographic access
6		1.4 100% of hospital admitted patients with malaria who are parasite positive on day 3 are followed up by active investigation at home, village level	Active investigation = investigate by biological diagnosis/PCR within 1 km radius in containment zone (CAM); by nearest 200 individuals (THA)	THA: YES CAM: YES (ARC3 study showing 10% positivity at D3)	N/A	90%	100%	Monthly reports	Monthly	Develop routine reporting system	
7	Objective 2: To decrease drug pressure for selection of artemisinin tolerant malaria parasites	2.1 100% of uncomplicated confirmed Pf malaria in Zone 1 treated with DHA-PIP in Cambodia (excluding MSAT operations) and atovaquone-proguanil in Thailand from May 2009	Confirmed by microscopy/ RDT. At public health facilities, by Villgae Malaria Workers/ Mobile Malaria Workers (CAM); by Malaria Post Workers (THA) Denominator: confirmed Pf cases	CAM: N/A but some data from Pailin; THA: N/A	N/A	100%	100%	Regular reports from HC/MWs	Monthly	Develop routine reporting system	
8		2.2 Proportion of recognized private sector outlets selling artemisinin monotherapy in Zone 1 reduced to 0% by end of 2009	Recognized means listed by PSI - Cambodia and DDF?	CAM: Yes, some data available from URC and PSI - drug outlet surveys; 2004 Community drug outlet survey (USAID); THA: N/A	N/A	0%	0%	Drug outlet survey	Survey	Include question in private sector survey; coordinate with URC and PSI	Regulations are enforced
9		2.3 In Cambodia, a public/private mix strategy is piloted in Zone 2 by end of 2009, with provider certification and collection of surveillance data	Sale of antimalarials banned in zone 1; Implement and evaluate system of interventions for improving case management practices in 2 operational districts of zone 2(CAM); surveillance data??	N/A	N/A	TBD	TBD	Provider survey	Survey	TA needed on developing strategy	

#	Goal/Objectives	Indicators for success	Clarification of Terms	Baseline Available?	Identified Gaps in Baseline	Target 2009	Target 2010	Data Source(s)	Frequency/ Method of data collection	Next steps	Assumptions
10		2.4 Drug inspections are regularly carried out and regulatory action is taken and a report of such actions are disseminated through appropriate channels to province and district authorities and across the border	Regularly should be at least 6 monthly	N/A	N/A	TBD	TBD	Drug inspection reports (including number of outlets inspected, no. of regulatory actions carried out, etc)	Quarterly	Check with DDF for baseline/ information; To be verified Note: Justic health inspectors perform routine supervisory visit to private services (supported under GF/HSS)	
11		2.5 % of sampled drugs that are fake or substandard ACTs is zero in Zone 1 and <5% in Zone 2 (towards zero countrywide by 2015)	See other projects/partners	CAM: Yes, possibly drug outlet survey from DDF, USP?	N/A	5%	0%	DDF, USP, NGOs	Survey	Contact DDF; To be verified Note: Pharmacy unit at PHD conduct test using MINILAB kit	
12	Objective 3: To prevent transmission of artemisinin tolerant malaria parasites by mosquito control and personal protection	3.1a 100% coverage of resident population (2 persons per net) with LLINs in Zone 1 in Cambodia and in all endemic villages (A1 and A2 with 1 net per person) in Thailand; 3.1b >90% coverage of population <2km of a forest in Zone 2 (Cambodia) with ITNs by 06/09 and beyond	Denominator: Population resident (Thai and M1: migrants who stay >6 months) and M2: migrants <6 months	THA: YES, baseline to be done in early 2009; CAM: YES, CMS 2007	N/A	90%	100%	CAM: estimates compiled by VHVs, health center data of all villages in Z1 and target villages in Z2	Survey	THA: M2 needs to be estimated through survey; baseline survey of how many nets to be distributed; need to make sure persons/net accurately captured	
13		3.2 Population sleeping under LLIH/LLINs/ITNs the previous night increased to >90% in Zone 1 and areas <2km of forest (Cambodia), and endemic villages in Zones 1 and 2 (Thailand) by 2010	Should be conducted immediately after rainy season	THA: YES, baseline to be done in early 2009; CAM: YES, CMS 2008	N/A	70%	90%	Household surveys	Survey	Update survey tools	
14	Objective 4: To limit the spread of artemisinin tolerant malaria parasites by mobile/migrant populations	4.1 Situation analysis of migrants completed (Thailand, Cambodia) by 06/09	Definition of migrant: (THAI resident < 6 months); No clear definition of migrant in CAM	THA: YES, baseline to be done in early 2009; CAM: N/A (It is estimated that there are >400,000 border crossers annually)	N/A	TBD	TBD	Situational analysis report; literature search on migrants for CAM	Survey	CAM: Agree on definition of migrant populations; Initial FGD with key informants to identify areas with migrant/mobile pop; compile information already collected from NGOs, etc	

#	Goal/Objectives	Indicators for success	Clarification of Terms	Baseline Available?	Identified Gaps in Baseline	Target 2009	Target 2010	Data Source(s)	Frequency/ Method of data collection	Next steps	Assumptions
15		4.2 Number of long-lasting insecticidal hammock nets (LLIHN)/LLINs distributed to population for overnight stays in the forest increased to 160,912 LLIN and 87,738 LLHN in Cambodia and 86,000 LLHN in Thailand by 06/09	Mobile/migrant populations coming from outside of CNM malaria target zones i.e beyond 2km of a forest (cross border, seasonal workers, new settlers), assessed by VMW/VHVs and mobile malaria workers (MMW)	THA: information on M2 population available per village; CAM: possibly from national surveys, etc	N/A	TBD	TBD	Reports from community workers/volunteers	Monthly	Figures to be updated from situational analysis	Mobile populations can be identified and contacted
16		4.3 At least 80% of temporary forest workers/mobile populations who slept under an ITN the last time the person spent the night in the forest	Mobile/migrant populations coming from outside of CNM malaria target zones i.e beyond 2km of a forest (cross border, seasonal workers, new settlers), assessed by VMW/VHVs and mobile malaria workers (MMW)	THA: denominator is M2; CAM: URC FGD data may be available?	CAM/THA: Need to identify/compile existing data about migrant/mobile populations	50%	80%	THA: monthly reports; CAM: VMWs monthly report	Survey	CAM: Need to formulate clearer definition of mobile/migrant populations; CAM/THA: need to include questions on migrants in household surveys	Mobile populations can be identified and contacted
17		4.4 Number of contact points established (based on initial situational analysis) to provide malaria diagnosis, treatment, prevention, and messages to mobile/migrant populations by end of 2009 and end 2010	Contact points to be defined; for e.g. in Cambodia, it may be MMW. In Thailand: village malaria workers in A1 and A2 plus malaria clinics and migrant liaison officers established for health education/prevention.	THA: 120 (includes malaria posts, malaria clinics, fixed schedule malaria clinics at checkpoints); CAM: 138 border villages have VMV who could collect info on mobile populations	CAM: Need to verify contact points	TBD	TBD	Mobile malaria worker reports	Monthly	CAM: Need to verify/define contact points	Mobile populations can be identified and contacted
18		4.5 Number and name of organizations (including civil societies, govt agencies and NGOs) working in forested areas along the border which are engaged in malaria control activities targeting mobile/migrant populations	Organizations includes civil societies, government agencies, and NGOs	THA: YES CAM: YES	THA/CAM: Need to obtain from relevant government agencies	TBD	TBD	MOH, Ministry of Interior, Foreign Affairs	Annual	Need to obtain from relevant government agencies	

#	Goal/Objectives	Indicators for success	Clarification of Terms	Baseline Available?	Identified Gaps in Baseline	Target 2009	Target 2010	Data Source(s)	Frequency/ Method of data collection	Next steps	Assumptions
19	Objective 5: To support containment/elimination of artemisinin tolerant parasites through comprehensive behavior change communication (BCC), community mobilization and advocacy	5.1 Proportion of household respondents aware of key messages on new treatment policy (Zone 1) and use of ITN (Zones 1 and 2) increased to 50% by end 09 and >90% by end 2010	Example of key messages: 1) people in Zone 1 should go to HF/MMW for diagnosis, 2) people in Z2 should go to HF/MMW or recognized private provider for care	N/A	N/A	50%	90%	Household surveys	Survey	Include questions in household survey	
20		5.2 Percentage of cross-border mobile/migrant populations aware of key messages at least 30% by end of 2009 and at least 50% by end of 2010	Cross border mobile/migrant population: (documented or undocumented); crossing border through official check posts as well as unofficial crossing points.	N/A	N/A	30%	50%	Special survey	Survey	Include questions in household/ special survey	Mobile/ migrant populations can be reached
21		5.3 In Cambodia, proportion of recognized private drug sellers who are aware of new treatment policy in Zone 1 and appropriate malaria diagnosis and treatment in Zones 1 and 2: at least 50% by end of 2009 and >80% by 2010	CAM: Treatment policy for zone 1= antimalarial (DHA+PIP); provided by public health facilities, VMWs/MMWs. Role of private sector is to diagnose and refer the confirmed malaria cases to the public health facilities	N/A	N/A	50%	80%	Drug outlet surveys	Survey	Include questions in drug outlet surveys	
22		5.4 Number of private companies where "malaria corners" are running	Applicable to Thailand; need to define what comprises a "malaria corner"	THA: YES	N/A	TBD	TBD	Thai Provincial team	Survey	Situational analysis of private owners, mapping, numbers of those who will cooperate	
23		5.5 Behavior of population in Zones 1+2 Cambodia and of mobile/migrant populations changes in terms of malaria diagnosis, treatment, and prevention/ personal protection by end 2010	Behavior change needs to be defined and clarified	Possibly from other behavioral surveys conducted	Need to disaggregate Z1 and Z2 and mobile populations	TBD	TBD	Behavioral survey; qualitative research	Survey	BCC specialist to develop	Interventions will lead to behavior change

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24		5.6 Number of provincial and district government meetings held against what is planned for advocacy and progress of containment operations		N/A	N/A	TBD	TBD	Provincial reports	Annual	Plan meetings	
25		5.7 Number of media reports promoting containment operations and advocacy, locally and internationally	Disaggregated Media reports include radio, television, newspaper, documentary films etc.	N/A	N/A	TBD	TBD	THA: communications officer	Annual	CAM: need to define a person	
26	Objective 6: To undertake basic, operational research to fill knowledge gaps and to ensure that strategies applied are evidenced-based	6.1 Completion of clinical trials and molecular genotyping studies to define artemisinin tolerance in CAM						Report of Research Steering Committee Meeting Cambodia	Annual		
27		6.2 Identification and processing of several protein candidates to develop a modified rapid throughput ELISA screening method for artemisinin resistance						Report of Research Steering Committee Meeting Cambodia	Annual		
28		6.3 Characterization of transcriptional differences between artemisinin resistant and artemisinin sensitive parasites						Report of Research Steering Committee Meeting Cambodia	Annual		
29		6.4 Completion and application of mathematical models of containment of artemisinin resistance						Report of Research Steering Committee Meeting Cambodia	Annual		

#	Goal/Objectives	Indicators for success	Clarification of Terms	Baseline Available?	Identified Gaps in Baseline	Target 2009	Target 2010	Data Source(s)	Frequency/ Method of data collection	Next steps	Assumptions
30		6.5 Extent of artemisinin tolerance is defined/mapped, using a simplified in vivo protocol for cases from public health facilities in Zones 1+2 by end 2010						District surveillance/ mapping reports (consolidated 3 monthly provincial reports)	Quarterly		
31		6.6 Mass screening and treatment trial (2 rounds) completed by 12/09 and conclusions are taken to guide major decisions on further use of MSAT by 03/10 (Cambodia)						Mass screening report, final MSAT evaluation report	Annual		
32		6.7 Effectiveness and acceptability studies of LLINs and LLIHNs completed and interim results available by end of 2010 (Cambodia and Thailand)						LLIN effectiveness study	Survey		
33		6.8 Key issues where further evidence is needed to adapt and refine strategies are identified, priority research agenda agreed and research initiated by mid 2010						Report of Research Steering Committee Meeting Cambodia	Quarterly		
34	Objective 7: To provide effective management and coordination to enable rapid and high quality implementation of the strategy	7.1 Functional harmonized cross-border surveillance systems in Zone 1 in Cambodia and Thailand produce regular monthly data (based on weekly case reporting from communities and peripheral facilities to districts in Zone 1) by end of 2009	Functional means monthly reporting and sharing of key information (number of mobile pop including cross border, # cases treated, routine surveillance, # cases positive at D3, drug efficacy data);	5 provinces (PL, BTB, PS, CHAN, Trad) have border health committee exchanging malaria info (Drug Efficacy Monitoring on different days of follow up (at least after 28 days) and do active investigation); Key contact person for both sites; some provinces/districts already have email exchange.	Need more info on existing systems/projects	TBD	TBD	District surveillance/mapping reports (consolidated 3 monthly provincial reports); HMIS; project artemisinin resistance mapping activities	Monthly	Technical meeting with THAI/CAM malaria officials to decide what information should be/can be exchanged; frequency of exchange; actions to be taken; CAM: needs to identify surveillance/mapping individual; need to set up milestones	

#	Goal/Objectives	Indicators for success	Clarification of Terms	Baseline Available?	Identified Gaps in Baseline	Target 2009	Target 2010	Data Source(s)	Frequency/ Method of data collection	Next steps	Assumptions
35		7.2 All operational levels are fully staffed for the containment project, according to plans, latest by 02/09		THA: YES CAM: YES	N/A	TBD	TBD	District/Provincial/National Reports	Quarterly		Staff have clear job descriptions and terms of reference
36		7.3 All peripheral staff (health facility and community level) are fully trained according to plan by 06/09	Training includes refresher training courses; staff know about key messages including diagnostics, new treatments, ITN use, actions to take, etc	THA: YES CAM: YES	N/A	TBD	TBD	Provincial reports	Quarterly	Update/develop training program	
37		7.4 Proportion of community level staff (VHV/ VMW/ malaria clinics/ malaria posts) are aware of key messages and perform according to TOR: 100% in Zone 1 and 80% in Zone 2 by end 2009, 100% in both zones by 2010	Key messages include the need for diagnosis, appropriate treatment, and prevention	N/A	N/A	100% (Z1) 80% (Z2)	100% (Z1) 100% (Z2)	VHV/VHW surveys at monthly meetings, supervision reports	Monthly	Develop and agree on key messages	
38		7.5 Diagnosis and new treatment available at all health facility levels by 04/09, and vector control supplies by 06/09	Diagnoses are parasite-based, including RDTs and microscopy	CAM: Health facility survey (URC)? THA: YES	CAM: Limited data on new treatments; THA: have not started using new treatments	100%	100%	Routine monthly reports, health facility surveys	Monthly	Consumption data at all levels; needs assessment; procurement facilitated by WHO and available on time	
39		7.6 Population, facility and outlet survey results analyzed and disseminated for strategy refinement by 08/09	Surveys can include rapid assessments (baseline & end project);	CAM: CMS 2007 THA: YES	N/A	TBD	TBD	Health facility, drug outlet, and household surveys	Survey	Surveys tools refined	Surveys are conducted, analyzed and distributed in a timely manner for strategy refinement
40		7.7 National, provincial, and district management teams submit timely progress reports (monthly reports from provincial level, national consolidation to project management quarterly)	Progress reports should be evaluated on 1) number, 2) timeliness, 3) quality of reports	N/A	N/A	TBD	TBD	Reports from district/provincial/ central	Monthly, Quarterly	Reporting formats need to be developed at all levels	

41		7.8 National Task Force Meetings organized according to national plans		THA: already conducted (1/09)	N/A	CAM (03/09 and 09/09)	CAM (03/10 and 09/10; THA (09/10)	National Task Force reports	CAM (2x/yr) THA (1x/yr)	CNM pending new composition of National Task Force	
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