Control and Prevention of Malaria Project

(CAP-M)

Burma

Semiannual Progress Report

(October 1, 2014 to March 31, 2015)

Last updated on April 30, 2015

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ACRONYMS

ACT	Artemisinin-based Combination Therapy
AMRP	Artemisinin Monotherapy Replacement Project
AOP	Annual Operation Plan
ARM	Artemisinin Resistant Malaria
ARC	American Refugee Committee
BCC	Behavior Change Communications
BHS	Basic Health Staff
CAP-M / CAP-Malaria	Control and Prevention of Malaria Project
CBO	Community-Based Organizations
CDA	Community Development Action
CHG	Community self-help groups
CPD-Myanmar	Country Program Director-Myanmar
COP	Chief-of-Party
CPI	Community Partner International
CRF	Community Referral Fund
DCOP	Deputy Chief-of-Party
DOT	Directly Observed Treatment
DMR	Department of Medical Research in Lower Myanmar
EDAT	Early diagnosis and appropriate treatment
FDA	Food and Drug Administration
GF	Global Fund to Fight AIDS Tuberculosis and Malaria
GMS	Greater Mekong Sub-region
GP	General Practitioner
HF	Health Facility
HH	Household
HMIS	Health Management Information Systems
IEC	Information, education, communication
IRC	International Rescue Committee
KBC	Karen Baptist Convention
LLIN	Long-lasting Insecticide Treated Net
MNMA	Myanmar Nurses and Midwives Association
MMA	Myanmar Medical Association
MMP	Mekong Malaria Program
MMP	Mobile and Migrant Population
MMW	Mobile Malaria Workers
MOH	Ministry of Health
MOU	Memorandum of Understanding
NMCP	National Malaria Control Program
NGO	Non-governmental Organization
NSP	National Strategic Plan
NTG	National Malaria Treatment Guideline
Pf	*Plasmodium falciparum*
Pv	*Plasmodium vivax*

QA	Quality Assurance
QC	Quality Control
RAI	Regional Artemisinin Initiative
RDTs	Rapid Diagnostic Tests
SCI	Save the Children International
SOP	Strategic Operational Plan
TES	Therapeutic Efficacy Surveillance
TIER 1	Areas with credible evidence of Artemisinin resistance
TIER 2	Areas with inflows of people from Tier 1 and / or bordering Tier 1
TIER 3 with Tier 1	Areas with no evidence of Artemisinin resistance and limited contact
TMO	Township Medical Office
URC	University Research Co., LLC
USAID	United States Agency for International Development
USP	United States Pharmacopeia
VBDC	Vector Borne Disease Control unit
VMWs	Village Malaria Workers
WHO	World Health Organization

1. Executive Summary

The USAID | Control and Prevention of Malaria (CAP-M) is a region-wide project that strives for systematic prevention and control of malaria and Artemisinin resistant malaria (ARM) in affected regions of Thailand, Cambodia, and Burma, aiming to stem the spread of multi-drug resistant *Plasmodium falciparum* (*Pf*) malaria in the Greater Mekong Sub-region (GMS). In Burma, CAP-M is implemented by University Research Co., LLC (URC) and Save the Children International (SCI), and with 4 local non-government organizations (NGOs) through sub-grants. The objectives of the project in Burma are to: 1) increase access to prevention interventions in target areas; 2) increase expand network of community-level diagnosis and treatment in target areas and improve access to these services; and 3) strengthen malaria control activities in target areas through health system strengthening and strategic information.

Several factors are contributing to increasing resistance in Burma, particularly along the Burma-Thailand border. Political instability in some regions (such as Rakhine and Kayin in some of the areas where CAP-M operates) have led to large movement of population and place addition burden on an already weak infrastructure and stretched resources. In other parts of the country, investment in mega development projects and agri-businesses (such as in Tanintharyi) have resulted in large migration of workers and their families in search of job opportunities from non-endemic and non-resistant areas to endemic and resistant areas. Availability of counterfeit and sub-standard antimalarial drugs can reduce treatment success and increase drug resistance. Burma has been addressing this issue since 2011 through the ban of import and sales of monotherapy and the introduction of quality seals for products approved by the Food and Drug Administration (FDA), Ministry of Health (MOH).

In Y4, CAP-M continues to strengthen the quality of service delivery in existing project areas, while expanding coverage in new expansion areas where there are gaps in malaria prevention and case management services (test and treat). A network of 1,161 Village Malaria Workers (VMWs) and CAP-M mobile teams provides malaria services to over 867,000 people in 1,363 villages in 26 townships under 4 States/Regions.

In responses to the preliminary findings from the mid-term evaluation conducted by external evaluators in Y3 and the USAID Regional Inspector General (RIG) team during Q1 Y4, CAP-M had adjusted Y4 activities and targets in close consultation with PMI/USAID technical team. In a continuous effort to improve CAP-M project Monitoring and Evaluation (M&E) system and relevant human resources, additional key staffs have been added at the township and central levels field, along with M&E implementation plan which include routine data quality audits and training for relevant staffs.

As the project enters its final 1.5 years of implementation, CAP-M will prioritizing remaining activities and put additional emphasis on sustainability of CAP-M efforts. One of the activities to

be discontinued in Y4 is the integrated malaria and antenatal services at health facilities (HFs), due to low malaria prevalence observed among 5,048 pregnant women in their first trimester who visited ANCs in selected CAP-M areas (0.07% positive) during Y3 implementation. However, Basic Health Staff and Midwives have the skills to provide integrated malaria and antennal care services from the training and monitoring from CAP-M since Y3 and Y4 Q1-2. The intensified case detection (ICD) using village-based strategy (VBS) and Malaria Information System (MIS has shown to be effective in identify hotspots and hot populations in Ann Township, Rakhine State. Such approaches are used to expand the ICD activities. Case-Management package in CAP-M include a model of Directly Observed Treatment (DOT) and D3 case management and foci elimination responses in ARM areas.

In addition to quality improvement within the project, CAP-M is working with the National Malaria Control Program (NMCP) and Region/State Health Department to strengthen malaria services in the health system. At the national level, CAP-M is represented in the Technical Strategic Group, and serves as the Secretariat in the sub-Technical Strategic Group on M&E.

CAP-M continues technical support to NMCPs in the areas of Quality Assurance (QA) system for malaria diagnosis and treatment in the project townships. Previous efforts included the development of National Guidelines and Standard Operating Procedures (SOPs) for Malaria Microscopy and intensive training workshop for laboratory technicians (in collaborations with UNICEF and NMCP). To ensure that the QA SOP and malaria lab services are function, CAP-M has advocated and develop laboratory QA plan for Y4 (Q3-4). The QA plan includes joint supervisory visits (CAP-M and township Malaria Supervisors) and training, and a quarterly review and dissemination of laboratory QA findings at the local level to ensure quality laboratory services while improving confidence in the laboratory results among medical practitioners. Other key areas of emphasis in Y4 include increasing engagement of the private providers and improving partner's coordination as part of the local health system strengthening.

Program Key Achievements in Q1-2, Y4

- Prevention
  - A total of 71,896 LLINs were distributed
  - 145 Community Health Group (CHG) volunteers were trained in inter-personal communication (IPC).
    - Sustained one CHG in each of 193 target villages; and Community Referral Fund (CRF) system in 109 villages. The village CRF funds were used to refer 10 severe malaria cases to the hospitals Hlaingbwe.
  - A total of 284,220 people including 25,636 migrants were covered by IPC
  - For non-IPC activities
    - Print material: 186,839 pamphlets and 1,329 posters were distributed
    - Audio/Visual: Video shows were used during malaria outreach activities in the villages and reached estimated about 19,000 people. In addition, video shows

were also used to expose key malaria messages to an estimated 107,000 passengers through the private bus and boat systems.

- School BCC Tool Kits: A rapid assessment was conducted on 440 students selected from 135 schools (total population of 12,996 students) in August 2014 after 10 month of introduction and showed significant improvement in malaria knowledge compared to October 2013 when the Tool Kit was introduced.

➢ **Case Management**

- Trained 554 health workers in malaria diagnostics with microscopy or rapid diagnostic tests (RDT). The trained health workers included 277 Village Malaria Workers (VMWs) and Private Providers (PPs), 252 Basic Health Services (BHS) staff and 25 laboratory technicians.
  - CAP-M provided technical support to the Global Fund (GF) to train 103 laboratory technicians (Quantitative numbers already reported by GF and are not included in this reporting period)
- 529 health workers trained in malaria case management with ACT, including 277 VMWs and private providers and 252 BHS staff.
- Advocacy meetings were conducted with 33 private business representatives from 33 companies operating in 8 townships in Tanintharyi Region.
- 116,177 people were tested for malaria through different approaches (*e.g.* VMWs, screening points/stationary clinics and private providers, mobile clinics and intensified case detection)
- 4,344 cases were positive and 100% of cases were treated according to National Treatment Guidelines (NTG).
- Day three case management activities were implemented in 8 townships in Tanintharyi Region and Rakhine State covering 24 villages and 11 worksites. A total of 153 positive cases completed the Day 3 follow-up (92% completion) and among them, 5 day 3(+) cases were detected (Day 3 positive rate 3.3%)
- A village-based strategy was used by CAP-M to prioritize the 682 villages of Tanintharyi Region and Rakhine State: 272 (39.9%) villages were low risk, 243 (35.6%) villages were moderate risk, and 167 (24.5%) villages were high risk. Appropriate approaches were developed according to the malaria risk.
- Intensified case finding was done in 198 villages of 17 townships. 22,481 people out of 53,220 populations were tested and 923 cases (807 *Pf,* 96 *Pv*, 20 mixed, 4.1% MPR) were identified and treated according to NTG.

2. Challenges and Opportunities

There are many challenges in project implementation, however, CAP-M is being proactive in identifying local actions to address these challenges. However, some challenges will require a change in policy such as engagement with uniform services departments.

Challenges in malaria case finding

Since Y3, the number of malaria positive cases has been declining, including in CAP-M target areas, while case finding efforts intensified. This may be due to a reduction of malaria prevalence in the project areas following scale-up of activities. Alternatively, it may be that the target villages already had low malaria prevalence as the village selection was conducted in consultation with the NMCP and State/Region Health Departments using available health facility-based malaria information and availability of malaria services in the area. In Y4 CAP-M emphasized intensified case finding activities and used project information to better target these efforts in order to detect more malaria cases for treatment. Village-based malaria situation analyses are used by CAP-M to stratify and prioritize hot populations and hot spots for intensified case finding activities and for expansion into new geographical areas.

Implementation of malaria control activities in areas controlled by Non-State Actors

Activities to be implemented by international NGOs in areas controlled by Non-state Actors (NSA) required continuous negotiation. Accurate estimates of disease burden and coordination can be a challenge due to poor health infrastructure and health information systems. CAP-M efforts to gain access through local NGOs using a sub-grant mechanism. However, a sub-grant with DEAR, a locally registered NGO in Burma, was terminated due to their limitation of access by the NSA. Some INGOs such as the International Rescue Committee (IRC), American Refugee Committee (ARC), Community Partner's International (CPI), MAM, and SMRU are allowed to work in these conflict areas by the ethnic health department through local (non-register) NGOs or may be limited to working in refugee camps. Access to these areas for project monitoring and supervision will be restricted and will be a challenge to ensure quality implementation and quality information.

Community level promotion of ITN care and use

Low level of LLIN use by some communities where adequate LLINs were distributed is one of the challenges in some of the project villages. Some villagers use their ordinary bed nets despite distribution of an adequate amount of LLINs. Strengthening awareness on utilization of LLINs and impregnation of ordinary nets by KO Tab should considered as a solution.

Late arrival of KO Tab for impregnation of ordinary nets can lead to difficult field operations during the rainy season.

A significant proportion of malaria may be transmitted outdoor. Workers are often engage in occupational related activities which coincided with mosquito peak feeding time, 8pm to 9pm *Anopheles maculatus* and 11pm to 1am for *Anopheles minimus* (results from CAP-M supported entomology surveys in target areas). Available prevention to address outdoor biting is also limited.

Mobile/Migrant Populations (MMPs)

Some migrant communities live and work in hard-to-reach areas where malaria transmission can be intense. Self-medication and incomplete treatment with antimalarial have been reported as common practices and likely contributed to drug resistant problem. CAP-M advocated to the business sector and also recruited migrant workers or their family members as volunteers to serve in their temporary communities. CAP-M's work with informal private providers, often providing health services to migrant communities where the public health system is severely restricted, and providing them with appropriate training and tools to treat malaria according to the NTGs assists in the coverage of MMPs.

Working with uniformed service staff and their families

This group is at high-risk as they are required to remain outdoors at night as part of their duties. Their units move often and can potentially drive the spread of resistant parasites from Tier 1 to other parts of the country. CAP-M is working with the township medical offices and network of basic health staff to conduct intensified case-finding and treatment.

Forecasting and Quantification of RDT & ACT

It has been difficult to accurately quantify and forecast RDT & ACT requirements due to the lack of adequate and precise information on the malaria burden in project areas from the MIS, leading to oversupplies of RDT & ACT in Y3. During Year 4 implementation, CAP-M collected more information and utilized project information to improve quantification and forecasting of malaria commodities.

Lack of services apart from malaria

As a result of scale-up of activities in project areas, there is a declining trend in malaria burden. VMWs are seeing increasing negative tests (based on RDT) among fever patients who are then referred to Health Facilities or private providers. The concern is that the inability of VMWs to address minor and uncomplicated health concerns may discourage future visits following next fever episodes by patients. VMWs should be provided with appropriate training and supplied with essential over-the-counter medicines to treat minor illnesses as part of integrated primary health services. This may provide a better prognosis for patients with minor illness complaints and build confidence in VMWs in their communities.

3. Program performance during reporting period

In Y4, CAP-M expanded activities in 3 townships in Bago East area (Tier 1) following MOU-approval by the MOH and Bago East Health Department. Due to movement restrictions by the ethnic health department in Kayin, CAP-M has proposed to expand into Kayah State. The expansion in Kayah will depend on a thorough review of malaria information, landscape assessment of stakeholders and activities to determine existing needs and gaps, as well as approval from USAID/Burma and USAID/RDMA. MOH approval to implement in Kayah State has already been granted to CAP-M/SCI.

CAP-M started implementation in 7 townships. At the end of Y2 and Y3, the project covered 14 townships and 24 townships, respectively. Now, CAP-M cover 26 Townships. The total population in these 26 townships is approximately one million including mobile and migrant population.

At the end of Y4 Q2, the total village population covered is **867,248** in the project villages. In addition to the population coverage shown in Table 1, CAP-M services cover the migrant population, internally displaced persons (IDPs), and refugees. [1]

Table 1: Townships, Villages and estimated population coverage in CAP-M Project Areas as of Y4.

Region / State	Townships	# Villages and Work Sites (Covered)	# House hold	Population	No. of VMWs/PP
Tanintharyi	10	505	55,701	241,792	305
Rakhine	7	365	99,305	394,022	365
Kayin	6	331	27,686	147,022	329
Bago (East)	3	162	18,210	84,412	162
Grand Total	**26**	**1,363**	**200,902**	**867,248**	**1,161**

Figure 1 - Geographical coverage of CAP-M Burma Y4.

[1] *Remarks- (Tanintharyi Region and Kayin State IDPs – 77,600 people and 106,800 people, respectively; Data source – Oxford Burma Alliance 2011 and Tanintharyi Region Refugee- 6,015 people: Data Source – UNHCR updated June 2014, South-East Asia Myanmar Information Management Unit*).

3.1 IR 1: Use of preventive interventions among community at risk increased

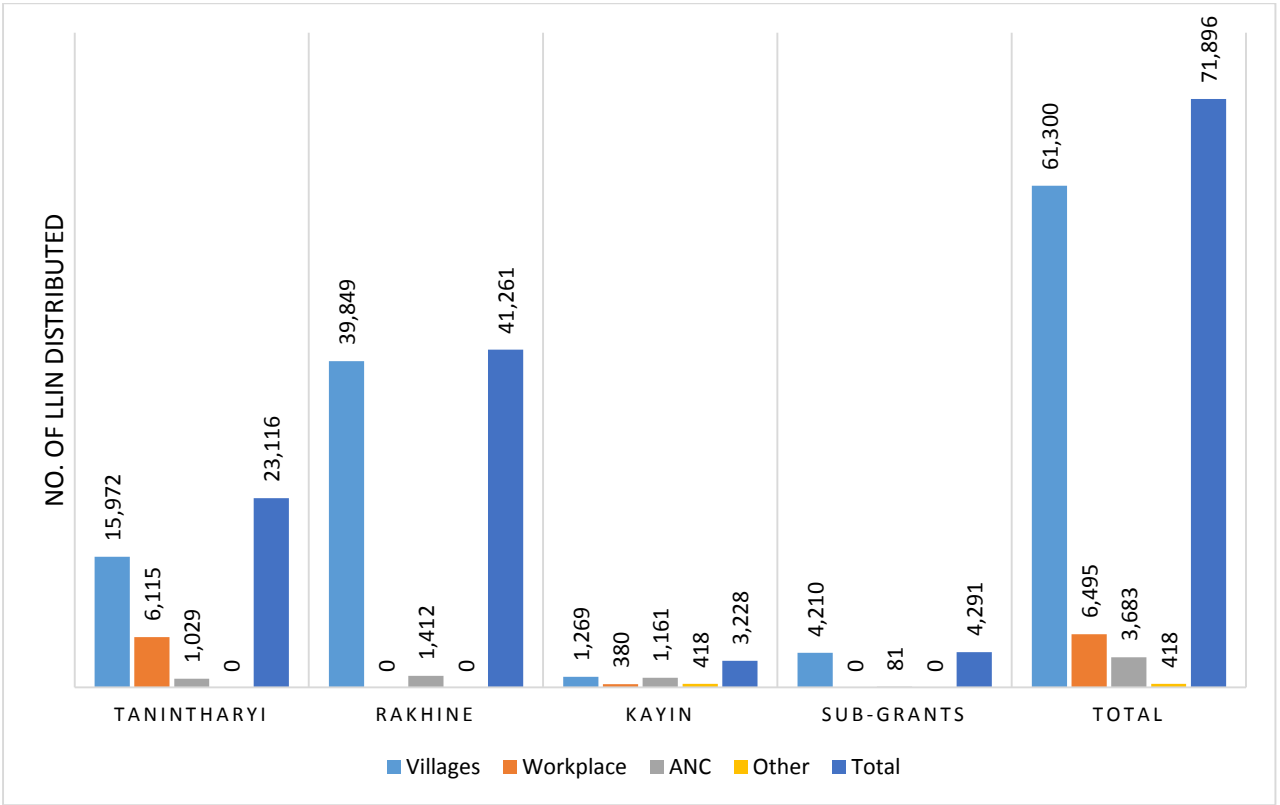
3.1.1 Community Level distribution of ITNs

LLINs distribution in Villages, work sites and others

In Y4, a total of 150,000 LLINs were procured for CAP-M. Of these, 100,000 LLINs had already been delivered to CAP-M/Burma and the remaining 50,000 LLINs will arrive in Burma in Y4 Q4. In this reporting period (Y4 Q1-2), CAP-M distributed 71,896 LLINs (48% of Y4 target) through different distribution channels. A large proportion of this was through household distribution covering residents and migrants in target villages. A total of 61,300 LLINs (85%) were distributed to 121,418 residents (95% population coverage) in 28,480 HHs (96% coverage) in 326 malaria endemic villages. As migrant communities are often left out of the traditional census and HH distribution scheme, CAP-M takes more pro-active approaches to reach out to this high-risk group to improve LLIN gaps in migrant communities including intensified case finding activity (more discussion in IR3) and reaching out to private businesses. Another 6,495 LLINs (9%) were distributed to cover 11,754 migrant workers from 3,953 households (98%) in 90 villages/worksites. Another 3,683 LLINs (5%) were distributed to pregnant women at the ANC clinics during their first visit.

Photo 1: CAP-Malaria staffs navigating through the rough water to bring LLINs to Yay Kaut Village in Thandwe Township (left) and Pharthar Chaung village in Dawei Township (Right). Photo: CAP-Malaria, Burma, March 2015.

Figure 2: Summary of LLIN distribution by various channels by State / Region during Y4 Q1-2



3.1.2 Monitoring on net coverage and net usage

Monitoring on LLIN ownership and use was conducted in Rakhine State (3 townships) and Tanintharyi Region (7 townships) due to high malaria burden and large migrant populations. A total of 204 villages (25% of CAP-M target villages in Rakhine and Tanintharyi) in the randomly selected villages and households (target of 12 households/village). For CAP-M, a definition of poor coverage is >2.5 persons per LLIN and <80% LLIN usage rate (slept under the ITN previous night). An immediate response following poor coverage result include top-up LLIN distribution and/or health education packages as appropriate. Summary of results are shown in the Table 2.

In Gwa and Munaung Townships, although numbers of LLINs were adequate, LLINs are not used possibly due to low malaria prevalence. HE emphasis on nightly LLINs use was given to the community.

The average LLIN coverage (ownership) is poor in Bokepyin and Kawthoung townships, 3.59 persons per LLIN and 4.63 persons per LLIN, respectively. In Bokpyin Township, most of the villages had received one LLIN/household by the NMCP, without considering the household population. Therefore, CAP-M distributed an additional LLIN/household without assessing the gaps. In Kawthoung Township, although LLINs were distributed in adequate numbers, because of high turnover rates of migrants. Newcomers arrived without ITN, thus lowering the LLIN ownership rate. In these 3 townships, LLIN utilization rates were low because of an insufficient number of LLINs.

Based on these findings, CAP-M field teams are distributing LLINs in Kawthoung and Bokpyin townships and providing health education. Some of the LLINs from Dawei Township were reallocated to Bokpyin as Dawei Township currently has full coverage (see Table 3).

Table 2: LLIN ownership and usage monitoring during Y4 Q 1-2

	Tanintharyi Region							Rakhine State		
Township	**Bokpyin**	**Kawthoung**	**Kyunsu**	**Myeik**	**Thayet-chaung**	**Tanin-tharyi**	**Palaw**	**Gwa**	**Ramree**	**Munaung**
# of villages	16	2	8	4	1	6	7	18	91	40
# of HH Members	704	74	509	244	49	377	445	797	4853	1891
# of LLINs Received Within 3yrs	196	16	243	121	27	219	238	352	2341	962
Population Per LLIN	**3.59**	**4.63**	2.09	2.02	1.8	1.72	1.87	2.26	2.07	1.97
% of People Slept Under Bed Nets Previous night	83.98%	84.29%	90.14%	94.35%	100%	92.22%	95.75%	99.10%	98.98%	92.17%
% of People Slept Under LLINs previous night	43.58%	35.71%	74.08%	71.37%	73.47%	81.67%	90.09%	**63.76%**	93.73%	**71.58%**

Table 3: Response to LLINs ownership monitoring findings in Bokepyin and Kyunsu

Township	Village	Population Per LLIN (monitoring results)	# of LLINs Distributed (after monitoring)	Population Per LLIN (after monitoring)
Bokepyin	Buu Pin Kwin (WS)	3.40	61	1.82
	Chaung Phyar (WS)	10.67	30	1.43
	Kaung Mha Kaung (WS)	3.08	27	1.70
	Sa Khan Thar (WS)	4.38	54	1.72
	Si Chaung (WS)	2.47	51	1.43
Kawthoung	J1	3.17	176	1.86
	J2	9	124	2.27

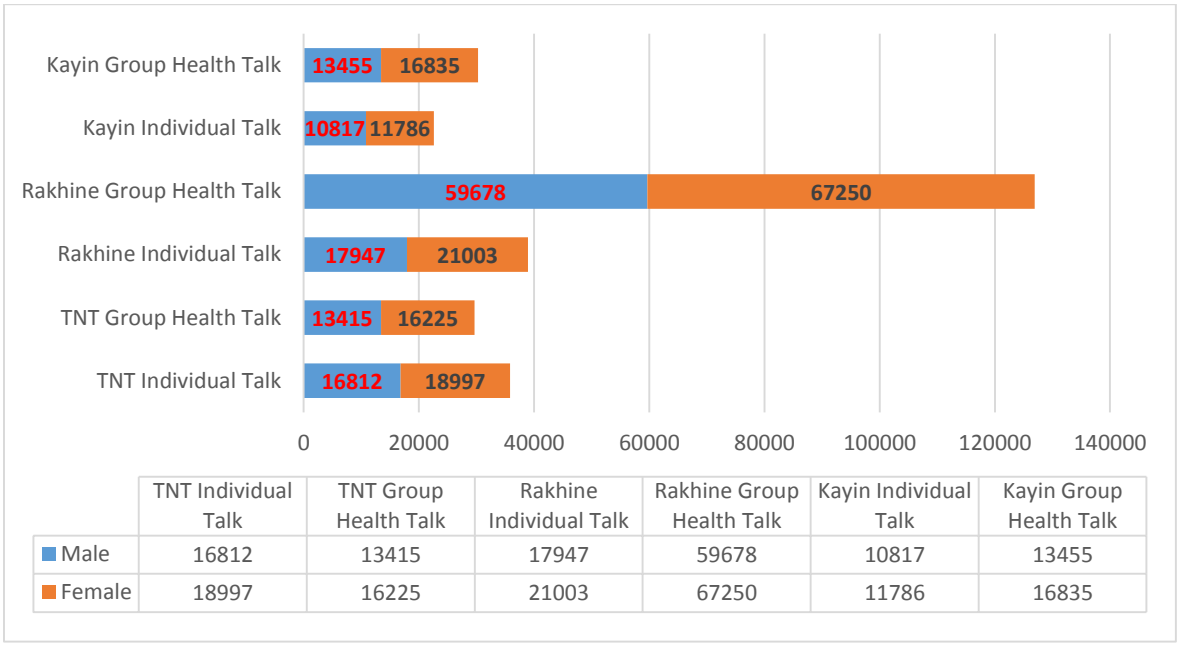
3.1.3 Community level promotion of ITN care and use

3.1.3a Interpersonal Communication (IPC)

Total 284,220 people including 25,636 migrants were reached in all states/regions with malaria preventive messages through IPC HE activities (individual and small group talk).

HE sessions at migrant worksites in (Left) Yuzana Palm Oil Plantation E-4, Bokepyin and (Right) Pyin Gyi village, Palaw. Photo: CAP-Malaria/Burma, March 2015

Figure 3: Number of people reached through IPC including migrants, Y4 Q1-2



	TNT Individual Talk	TNT Group Health Talk	Rakhine Individual Talk	Rakhine Group Health Talk	Kayin Individual Talk	Kayin Group Health Talk
Male	16812	13415	17947	59678	10817	13455
Female	18997	16225	21003	67250	11786	16835

3.1.3b Engaging Private Providers and private companies to improve access to malaria control and prevention among workers and migrant population

Advocacy and training activities for Private Providers (linked to B.1.2.d1)

(Left) Advocacy meeting with representatives from private companies at South Dagon Palm Oil Plantation Hall, Bokepyin. (Right) Pictured is the District Chairman from Karen National Union (KNU) who participated in the advocacy meeting in Dawei. Photo: CAP-Malaria/Burma, March 2015

Tanintharyi region (Tier 1) has been experiencing large economic growth from land development activities and mega-infrastructure projects in the Special Economic Zones (SEZ), which attract large numbers of migrant workers and their families seeking employment from other States and Regions (Tier 2 and Tier 3). Large construction projects in Dawei SEZ include a deep sea port and an international highway connecting the deep sea port to Thailand and SE Asia. This required large areas of forest clearance, exposing workers to malaria. Beside land development, much of Tanintharyi economy is based on palm oil and rubber production, and timber extraction as a byproduct of forest clearing for palm and rubber planting and construction. Interestingly, the large demand for workers in Tanintharyi Region can also be attributed to Tanintharyi residents leaving and crossing the border to find employment in Thailand as higher wages can be obtained.

CAP-M works with private companies to engage the private sector in health issues for their employees (migrant and resident workers). In Y4 Q1-2, CAP-M conducted advocacy meetings with 155 representatives from 33 private companies. A total of 72 volunteers from private companies and informal private providers from different townships were trained as Private Providers (PPs). Malaria staffs from the NMCP joined these trainings as invited trainers to promote local ownership. In these trainings, participants were trained on case diagnosis, treatment, DOTS, IPC and how to record and report activities by using reporting formats. At the end of training, all new PPs were provided RDTs and anti-malarial drugs to conduct case finding and management and provide health education to the private sector community.

3.1.3c School Malaria Education

CAP-M's BCC Health Facilitator and BCC Coordinator conducted monitoring visits to assess the usage of school BCC tool kits in 22 schools covering 10 teachers (purposive sampling) and 440 students. During the visit, HE session were conducted with students. The BCC toolkit was designed to complement the national health education curriculum by providing additional malaria contents in the edutainment format to help reinforce the key concepts in the malaria classroom curriculum.

Health Facilitator conduct questions and answers sessions with eager students in Nyaung Yan Taung primary school (left). Student planning malaria themed Snake and Ladder game (middle) Students demonstrating playing game card at No. 4 high school in Dawei (right). Photo: CAP-Malaria/ Burma, March 2015.

Assessment of malaria knowledge among students in School BCC

Objectives

To evaluate the improvement of knowledge on malaria and utilization of school malaria BCC tool kit sets among school children and teachers (caregivers) and provide recommendation for actions.

Methodology

Baseline assessment was conducted in October 2013 (Y3 Q1) and follow-up assessment was in August 2014 (Y3 Q4). Results were entered, cleaned, analyzed and compared in Y4. Baseline was limited to a quantitative descriptive study but follow-up assessment included quantitative assessment method followed by qualitative method. A consultant and the school BCC Coordinator and field team conducted the quantitative survey by using questionnaires in both baseline, as well as focus group discussions to explore KAP of school children and key informant interviews to assess the awareness level of teachers and using the observation method.

Study population for both assessments were primary and secondary students (Grade 4 to Grade 8) and teachers in selected schools in Dawei. Multistage clusters sampling using PPS was used to select 422 schoolchildren for quantitative assessment, and 5 Focus group discussions and 10 Key informant interviews were conducted.

The possible answer scores ranged from 0 and 11 and respondents' knowledge were classified into three levels: high level (score higher than 7), moderate level (score of 5 to 7), and low level (score below 5).

Findings

Via quantitative questionnaires, knowledge level of respondents were described comparing between baseline and end line assessments as follow:

Table 4: Percentage of students stratify by their knowledge score at Baseline and follow-up assessment after 10 months of exposure to BCC school toolkit (N = 422 schoolchildren).

	High level	Moderate level	Low level
Baseline (Oct 2013)	45.9%	50.2%	3.9%
End line (Aug 2014)	100%	0%	0%

All children surveyed scored high level. Also from FGDs, students have knowledge that malaria was caused by mosquito bite, signs and symptoms of malaria, and early diagnosis and treatment should be applied for testing and treating malaria. However, some children still include wrong responses like preventive measures like drinking boiled water and using mosquito coils.

Experience on school BCC toolkit set

All children had played toolkit sets during classes at least monthly with the encouragement of their teachers. The 40 participating respondents in the focus group said the snake and ladder game (35%) was the most famous among them. The puzzle game (30%), comic book (20%) and game cards (15%) were less interesting than the snake and ladder game.

3.1.3d Small media

CAP-M uses visual aids to improve communication with beneficiaries while providing health education and improve malaria awareness and prevention. During the reporting period, a total of 186,839 pamphlets and 1,329 posters were distributed during IPC HE and group HE sessions, malaria outreach, and special event activities. In addition, video shows were also used to help reinforce malaria information during group HE sessions in the community as well as to patients at selected health facilities. Where appropriate, information boards are posted in the community and billboards near the hospitals are installed to further emphasize important messages.

(Far left) CAP-M staff provided a summary to village audience following a malaria video show in Naw Kwar villages, Hpan-an township. (Middle left) Villagers studied malaria pamphlets distributed by CAP-M staff following health education session. (Middle right) CAP-Malaria billboard outside of a hospital in Hlaingbwe township. (Far right) Example of village information board installed in Kayin State. Photo: CAP-Malaria/Burma, April 2015.

3.1.3e Bus Services

Highway bus is one of the most common public transportation channels used by both residents and migrants in Tanintharyi Region and southern Rakhine State. Depending on the local environment, CAP-M also engages with boat operators in selected townships, particularly those situated on the coast.

Generally, the engagement of private bus companies requires proactive advocacy and negotiation by the CAP-M staff. The main activities include (1) video shows on the bus and at the bus stations, a display of stickers featuring key malaria messages, and distribution of pamphlets. In selected townships, malaria messages are printed on the bus seat covers and on the bus tickets.

During this reporting period, there were 2,671 trips operated by 25 bus lines and 1 boat line participated in the campaign with CAP-M, transporting 113,217 passengers. Video shows were performed during 2,515 trips where 107,235 passengers were exposed. Total 9,226 pamphlets, stickers and tickets with malaria messages were distributed to passengers

Examples of malaria messages featured on the private buses included stickers (Left) and seat covers (Right). Malaria educational pamphlets were distributed to passengers. Photo: CAP-Malaria/ Burma, April 2015.

3.1.3f Mass media

World Malaria Day events & Festival HE

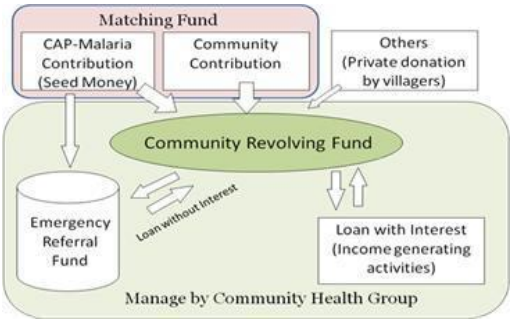
CAP-M engages in community raising awareness activities by taking advantage of special events organized by the local governments and the communities such as Independence Day, New Year Day, marathon race, and festivals, *etc*. Malaria exhibition and games are usually organized, along with free malaria testing and treatment services. CAP-M participated in 5 special events where more than 7,000 people were reached.

CAP-Malaria volunteers led participants in a game of malaria themed Snake and Ladder game during Kyone Doe Campfire festival in Kawkareik (left), and in Dawei (middle). Group health education to students at Kayin State Day Celebration in Hpa-an. Photo: CAP-Malaria/Burma, March 2015.

3.1.3g Community Self Help Group

- **Emergency referral supports through Community Revolving Funds**

Since the start of Y2, CAP-M established Community Revolving Funds (CRFs) in 109 villages, a community financing scheme where a pool of funds raised by the community was matched with a grant from the project. The CRF is managed by community health groups (CHG) with the purpose of removing financial barriers to utilization of malaria and health services. To sustain the CRFs, income is generated through low-interest loans (2-5% depending on the community) for non-health purposes. The interest can be used to assist community members for health-related purposes such as providing a non-interest loan for transportation of pregnant woman with malaria or severe malaria cases to appropriate health facilities.



During this reporting period, 14 patients benefited from this emergency referral support through the CRFs. In Hlaingbwe, 10 severe malaria cases were referred to Myaing Gyi Ngu Health Center and Hlaingbwe Township Hospital. In Myawaddy, 4 complicated / severe malaria cases were referred to the hospitals. All of the hospitalized cases were discharged with good outcomes.

3.2 IR2: Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in areas with existing or threatened Artemisinin-resistant malaria.

3.2.1. Training on malaria diagnostic (RDT +/or microscopy) and proper case management

3.2.1a Training of Health Facility Staff and VMWs including Private Providers on diagnostic and case management, Y4 Q1-2

Malaria technical persons from the NMCP were invited as facilitators during all training sessions supported by CAP-M to promote country ownership.

Table 5: Summary of training in Case Management (ACT) disaggregated by professional group and sex, Y4, Q1-2

Township	Health Facility staff *(BHS, Lab technicians, etc.)*				Community level Village *(Village Malaria Workers/Private Providers)*			
	M	F	Sub-total	Y4 Q1 & 2 Target	M	F	Sub-total	Y4 Q1 & 2 Target
Nyaunglaybin	*26*	*72*	*98*	*50*				
Kyauktagar	*17*	*76*	*93*	*50*				
Yedashe	*13*	*48*	*61*	*50*				
Bago East Sub-total	**56**	**196**	**252**	**150**				
Kawthoung					*5*	*1*	*6*	
Tanintharyi Sub-total					**5**	**1**	**6**	
Gwa					*21*	*22*	*43*	
Rakhine Sub-total					**21**	**22**	**43**	
Hlaingbwe					*31*	*31*	*62*	
Hpa-an					*30*	*32*	*62*	
Hpa-pun					*8*	*26*	*34*	
Kawkareik					*16*	*30*	*46*	
Kyainseikgyi					*3*	*0*	*3*	
Myawaddy					*6*	*15*	*21*	
Kayin Sub-total					**94**	**134**	**228**	
Grand total	**56**	**196**	**252**	**300**	**120**	**157**	**277**	**550**

Table 6: Summary of training in Malaria Diagnostics (RDT or microscopy) disaggregated by professional group and sex, Y4, Q1-2

Township	Health Facility staff *(BHS, Lab technicians, etc.)*				Community level Village *(Village Malaria Workers/Private Providers)*			
	M	F	Sub-total	Y4 Target	M	F	Sub-total	Y4 Target
Nyaunglaybin	*26*	*72*	*98*					
Kyauktagar	*17*	*76*	*93*					
Yedashe	*13*	*48*	*61*					
Bago East Sub-total	**56**	**196**	**252**					
Kawthoung					*5*	*1*	*6*	
Tanintharyi Sub-total					**5**	**1**	**6**	
Gwa	-	-	-		*21*	*22*	*43*	
Rakhine VBDC	*17*	*0*	*17*		-	-	-	
Sub-total in Rakhine	***17***	***0***	***17***		***21***	***22***	***43***	
Hlaingbwe	-	-	-		*31*	*31*	*62*	
Hpa-an	-	-	-		*30*	*32*	*62*	
Hpa-pun	-	-	-		*8*	*26*	*34*	
Kawkareik	-	-	-		*16*	*30*	*46*	
Kyainseikgyi	-	-	-		*3*	-	*3*	
Myawaddy	-	-	-		*6*	*15*	*21*	
Kayin VBDC	*2*	*6*	*8*		-	-	-	
Kayin Sub-total	**2**	**6**	**8**		**94**	**134**	**228**	
Grand total	**75**	**202**	**277**	**330**	**120**	**157**	**277**	**550**

3.2.1b Training on microscopy for township laboratory technicians

A total of 5 refresher trainings on malaria microscopy and QA/QC for 103 laboratory microscopists (37 Male, 66 Female) from the State/Region and Township laboratories were conducted by the NMCP with the financial support of the GF.[2] CAP-M provided technical assistance as trainers and facilitators.

3.2.2 Supervision on Quality Assurance (QA) of RDT and laboratory results strengthened

3.2.2a QA of RDTs at the community level

This activity will be conducted during the second semi-annual period in collaboration with the Department of Medical Research (DMR). The CAP-M team has already discussed with DMR and it will be implemented 2 months after the arrival of the new batch of RDTs. RDTs will be collected from the central level, township level and volunteer level biannually. In Y3, because of the expiring date of RDT, CAP-M did not do QA of RDT. Generally, the criteria for collecting RDT for QA is to collect a box with 25 RDT strips from each level, especially hard-to-reach areas where the transportation is difficult and RDT are likely to be damaged due to temperature or humidity.

3.2.2b Setup and implement a routine laboratory QA System at CAP-M target health facilities in target areas

Support national QA system in CAP-M target area (Tanintharyi Region)

CAP-M discussed with the NMCP the important role of quality microscopy in the elimination strategy which led to the development of the national QA Guidelines and Standard Operating Procedures (SOPs). The QA Guidelines/SOPs have been endorsed by the NMCP and workshop dissemination is planned for Y4 Q3.

CAP-M is supporting the NMCP (Medical Technologists) to implement Malaria QA activities in HFs including Township and Station hospitals of Tanintharyi Region under CAP-M target areas. Criteria for a functioning QA system include:

- Laboratory staff in project areas receive training in QA SOPs;
- Laboratory staff in project areas achieving minimal competency level as recommended in the national SOPs;
- All HF laboratory staff in project areas routinely sending slides to NMCP according to the national SOPs;
- NMCP will conduct quarterly QA visits (with CAP-M support) to the selected HFs for monitoring and supervision and on-the-job coaching based on the following:
    - HFs with poor performance based on routine slide cross-check
    - HFs with inactive slide cross-check activity for ≥3 months

In Q2, CAP-M supported 5 laboratory microscopists from the NMCP to conduct monitoring visits and QA/QC assessment in 24 HFs in Tanintharyi Region. During QA visits, the teams monitored utilization of malaria microscopy services, supply of reagents, quality of prepared slides and

[2] *These training activities are already reported to the GF and only shown for descriptive purposes to indicate how CAP-M coordinates and leverages resources from stakeholders.*

microscopes, review of malaria laboratory data management systems and existing tools and instructions. The following observations were made from the monitoring visits (Table 7).

Table 7: Brief summary of observations and recommendations from the QA visits by NMCP and CAP-M in Tanintharyi Region

Observation	Remarks	Recommendations
Reagents not available or insufficient at the HF laboratories	Reagents available at the regional level but HF lab staff do not submit requests.	Reagents and other chemicals can be provided by using "pull system" for Quality Control
Few HF labs do not have functioning microscopes	NMCP can provide microscopes for townships.	Microscopists should request their needs to their immediate supervisors, then they can ask their demand to NMCP. CAP-M will support microscopes if NMCP does not.
Motivation	Interested persons should go through microscopy training in order to practice microscopy routinely.	Routine slide cross-checks will be endorsed by NMCPs and Regional VBDC Quarterly visits by NMCP staff
Approximately 40% of lab microscopists either did not routinely perform a microscope exam or performed below 75% accuracy	Trained persons should be assigned for malaria microscopy.	CAP-M will support the microscopist training and re-refresher training according to their needs.
Incomplete laboratory records	See above	See above

Strengthening of CAP-M Project QA/QC

Within CAP-M, there are a total of 7 Laboratory Technicians supervised by a Senior Chief Technician, with technical support from a Laboratory Coordinator (Yangon based). The roles of Laboratory Technicians are to perform malaria tests during mobile outreach and provide laboratory results/confirmation during DOT and Day3 Case Management.

CAP-M aimed to have project microscopists achieve competency level equivalence to the Regional level (Sensitivity-90%, Specificity- 95%); 4 microscopists achieved this. On the job training are provided to the other microscopists. (Refer: Guideline for QA/QC of Malaria Microscopy).

As part of CAP-M internal QA, monthly slide cross-checks are conducted on all positive slides and 20% of negative slides collected from all project sites. Almost all sites achieved more than 90% accuracy of species identification. Compliance to the QA system is also satisfactory as more than 90% of submissions and feedback are within 2 weeks, in line with the SOPs.

3.2.2c Supply diagnostic tools

A total of 130,275 RDT test kits were distributed to project staff and VMWs in Y4 Q1-2

3.3.3. Case management at the facility and community level

3.3.3a. Supply antimalarial drugs

A total of 22,981 ACT doses were distributed to project staff and VMWs in Y4 Q1- 2.

3.3.3b EDAT for uncomplicated malaria according to NTG by VMWs, mobile teams, screening points using DOT strategy

Table 8: Summary of Case Finding and Management in CAP-M Project area, Y4 Semi-annual

No	Case Finding Approaches	Tested	Total Positive	% treated according to NTG	*Pf*	*Pv*	Mixed	MPR%
1	*Mobile outreach Team*	*66,584*	*1,649*	*100%*	*1,363*	*241*	*45*	*2.48%*
2	*Village Malaria Workers*	*40,291*	*2,250*	*99.38%*	*1,412*	*770*	*68*	*5.58%*
3	*Screening Point*	*839*	*26*	*100%*	*2*	*24*	*0*	*3.10%*
4	*Private Providers*	*8,463*	*419*	*100%*	*288*	*121*	*10*	*4.95%*
	Total	**116,177**	**4,344**	**99.68%**	**3,065**	**1,156**	**123**	**3.74%**

3.3.3c (i) Case finding and management through mobile outreach teams

Table 9: Case Finding and Management through Mobile Outreach Team, Y4 Q1-2

No	Township	Tested	Total Positive	Pf	Pv	Mixed	MPR%
1	*Bokpyin*	*4,082*	*16*	*7*	*9*	*0*	*0.39%*
2	*Dawei*	*1,117*	*16*	*5*	*9*	*2*	*1.43%*
3	*Kawthoung*	*4,000*	*32*	*20*	*10*	*2*	*0.80%*
4	*Kyunsu*	*5,242*	*96*	*68*	*27*	*1*	*1.83%*
5	*Launglon*	*382*	*0*	*0*	*0*	*0*	*0.00%*
6	*Myeik*	*4,517*	*64*	*40*	*23*	*1*	*1.42%*
7	*Palaw*	*4,410*	*46*	*24*	*19*	*3*	*1.04%*
8	*Tanintharyi*	*5,129*	*54*	*19*	*33*	*2*	*1.05%*
9	*Thayetchaung*	*1,850*	*5*	*1*	*3*	*1*	*0.27%*
10	*Yebyu*	*1,051*	*6*	*0*	*6*	*0*	*0.57%*
Tanintharyi Total		**31,780**	**335**	**184**	**139**	**12**	**1.05%**
1	*Ann*	*14,221*	***1,091***	*1,002*	*61*	*28*	*7.67%*
2	*Gwa*	*1,462*	*16*	*12*	*3*	*1*	*1.09%*
3	*Kyuakpyu*	*1,687*	*1*	*1*	*0*	*0*	*0.06%*
4	*Munaung*	*1,403*	*0*	*0*	*0*	*0*	*0.00%*
5	*Ramree*	*2,516*	*19*	*6*	*12*	*1*	*0.76%*
6	*Thandwe*	*3,279*	*150*	*133*	*14*	*3*	*4.57%*
7	*Toungup*	*1,637*	*26*	*22*	*4*	*0*	*1.59%*
Rakhine Total		**26,205**	**1,303**	**1,176**	**94**	**33**	**4.97%**
1	*Hlaingbwe*	*1,812*	*1*	*1*	*0*	*0*	*0.06%*
2	*Hpa-an*	*1,825*	*0*	*0*	*0*	*0*	*0.00%*
3	*Kawkareik*	*2,941*	*0*	*0*	*0*	*0*	*0.00%*
4	*Myawaddy*	*2,021*	*10*	*2*	*8*	*0*	*0.49%*
Kayin Total		**8,599**	**11**	**3**	**8**	**0**	**0.13%**
CAP-M Mobile Total		**66,584**	**1,649**	**1,363**	**241**	**45**	**2.48%**

Total positive case load detected through mobile teams was 1,649. Among these cases 1,091 (66%) were found in Ann Township.

CAP-Malaria team conducted a mobile clinic in villages and worksites in remote locations far from formal health facilities including Kyauk Lone Gyi village in Tanintharyi township (Left), at Taline Yar Mining Site (Center), and Bosnway village, in Myeik township. Photo: CAP-Malaria/Burma, April 2015.

3.3.3d (ii) Case finding and management through Village Malaria Workers

Table 10: Case Finding and Management through VMWs approach, October 2014-March 2015

No	Township	Tested	Total Case	Pf	Pv	Mixed	MPR%
1	Bokpyin	764	23	5	18	0	3.01%
2	Dawei	1572	229	64	160	5	14.57%
3	Kawthoung	1355	86	28	57	1	6.35%
4	Kyunsu	1116	35	17	17	1	3.14%
5	Launglon	210	1	0	1	0	0.48%
6	Myeik	777	8	0	8	0	1.03%
7	Palaw	1338	46	24	20	2	3.44%
8	Tanintharyi	1960	46	22	21	3	2.35%
9	Thayetchaung	496	7	0	7	0	1.41%
10	Yebyu	152	10	3	7	0	6.58%
Tanintharyi Total		**9,740**	**491**	**163**	**316**	**12**	**5.04%**
1	Ann	2868	604	545	47	12	21.06%
2	Gwa	1462	69	48	19	2	4.72%
	Gwa (MNMA)	2,509	48	30	18	0	1.91%
3	Kyuakpyu	2812	11	5	6	0	0.39%
4	Munaung	1399	2	1	1	0	0.14%
5	Ramree	2164	16	7	9	0	0.74%
6	Thandwe	1565	179	157	19	3	11.44%
7	Toungup	1712	94	82	12	0	6.49%
Rakhine Total		**16,491**	**1,023**	**875**	**131**	**17**	**6.20%**
1	Hlaingbwe	3,220	197	92	103	2	6.12%
2	Hpa-an	2,247	20	8	12	0	0.89%
3	Hpa-pun (CDA)	3,775	213	137	73	3	5.64%
4	Kawkareik	1,240	21	1	20	0	1.69%
5	Kyainseikgyi (KBC)	1,391	217	125	59	33	15.60%
6	Myawaddy	1,509	66	10	55	1	4.37%
4	Thandaung (DEAR)	678	2	1	1	0	0.29%
Kayin Total		**14,060**	**736**	**374**	**323**	**39**	**5.23%**
CAP-M VMW Total		**40,291**	**2,250**	**1,412**	**770**	**68**	**5.58%**

3.3.3e (iii) Case finding and management through screening points / Fixed clinics

Table 11: Case Finding and Management through Screening Point, October 2014- March 2015

No	Township	Tested	Total Positive	*Pf*	*Pv*	Mix	MPR%
1	Bokpyin	105	4	0	4	0	3.81%
2	Kawthoung	461	1	1	0	0	0.22%
Tanintharyi Total		**566**	**5**	**1**	**4**	**0**	**0.88%**
1	Hlaingbwe	17	5	0	5	0	29.41%
2	Hpa-an	130	1	0	1	0	0.77%
3	Kawkareik	12	0	0	0	0	0.00%
4	Myawaddy	114	15	1	14	0	13.16%
Kayin total		**273**	**21**	**1**	**20**	**0**	**7.69%**
CAP-M SP Total		**839**	**26**	**2**	**24**	**0**	**3.10%**

Malaria screening points are established at the bus gate and Yuzana Palm Oil Production Factory's Jetty in Tanintharyi, and at Stationary Clinics in Kayin State. The rationale for (departure) screening point is to prevent the potential spread of drug resistant *Pf* from Tier 1 to other areas.

In Hlaingbwe, MHAA mainly run stationary clinic and most of the patients came to that clinic were migrants suffering fever so that MPR was very high among other clinics.

3.3.3f (iv) Case finding and management through private providers (PPs)

Table 12: Case Finding and Management through PPs, October 2014 - March 2015

No	Township	Tested	Total Positive	Pf	Pv	Mixed	MPR%
1	Bokpyin	301	21	4	17	0	6.98%
2	Dawei	102	10	2	8	0	9.80%
3	Kawthoung	283	8	1	7	0	2.83%
4	Kyunsu	802	18	4	14	0	2.24%
5	Launglon	0	0	0	0	0	0
6	Myeik	620	10	1	9	0	1.61%
7	Palaw	286	5	1	4	0	1.75%
8	Tanintharyi	751	54	27	21	6	7.19%
9	Thayetchaung	166	5	2	3	0	3.01%
10	Yebyu	0	0	0	0	0	0
Tanintharyi Total		**3,311**	**131**	**42**	**83**	**6**	**3.96%**
1	Ann	963	210	189	18	3	21.81%
2	Gwa	182	15	10	4	1	8.24%
3	Kyuakpyu	2204	0	0	0	0	0.00%
4	Munaung	0	0	0	0	0	0
5	Ramree	114	5	2	3	0	4.39%
6	Thandwe	63	0	0	0	0	0
7	Toungup	561	34	33	1	0	6.06%
Rakhine Total		**4,087**	**264**	**234**	**26**	**4**	**6.46%**
1	Hlaingbwe	377	10	8	2	0	2.65%
2	Hpa-an	201	6	1	5	0	2.99%
3	Kawkareik	115	2	1	1	0	1.74%
4	Myawaddy	372	6	2	4	0	1.61%
Kayin Total		**1,065**	**24**	**12**	**12**	**0**	**2.25%**
CAP-M PP Total		**8463**	**419**	**288**	**121**	**10**	**4.95%**

3.3.3g VMWs participation in providing Directly Observed Therapy (DOT) for *Pf* patient

Under CAP-M, DOT is primarily provided to the *Pf* patients by either VMWs or PPs, with regular supervision of VMW's DOT performance by CAP-M staff. *Pf* patients are enrolled for DOT by VMWs or PPs. Not all diagnosed *Pf* and Mixed patients are enrolled in DOT for different reasons, (1) patient resides in another village but received diagnosis and treatment services by CAP-M trained VMWs or PP; (2) patient resides in village where there is no VMW; (3) patient are migrants or patients must leave for work or personal reasons.

In such case, VMWs and PPs have been trained to provide the minimum 1st dose DOT of ACT plus single dose PQ (45mg), as well as a clear instruction for subsequent doses and the importance of taking the full treatment course so the patient.

Table13: Directly Observed Treatment (DOT) during Y4 Q 1-2

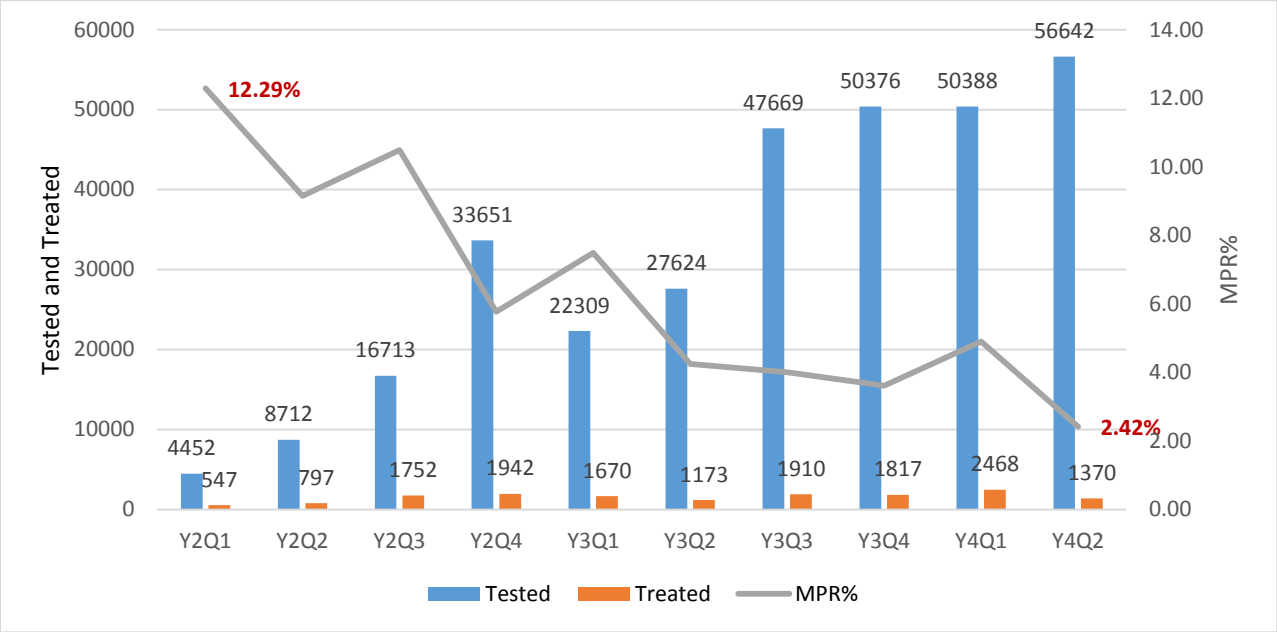
Township	Total Tested	Total *Pf* + *Pf*-Mix	Total *enrolled* in DOT	% enrolled in DOT	No. of patient completed full DOT	% of patient completed full DOT
Bokpyin	*124*	*8*	*8*	*100%*	*8*	*100%*
Dawei	*265*	*22*	*22*	*100%*	*12*	*54.5%*
Kawthoung	*520*	*22*	*17*	*77.3%*	*17*	*100%*
Kyunsu	*1480*	*21*	*21*	*100%*	*19*	*90.5%*
Launglon	*0*	*0*	*0*	*0*	*0*	*0*
Myeik	*6*	*1*	*1*	*100%*	*1*	*100%*
Palaw	*141*	*9*	*9*	*100%*	*9*	*100%*
Tanintharyi	*549*	*18*	*18*	*100%*	*18*	*100%*
Thayetchaung	*122*	*3*	*3*	*100%*	*3*	*100%*
Yebyu	*0*	*0*	*0*	*0*	*0*	*0*
Tanintharyi Total	**3207**	**104**	**99**	**95.2%**	**87**	**87.9%**
Ann	*1262*	*280*	*224*	*80%*	*224*	*100%*
Gwa	*125*	*27*	*24*	*88.9%*	*24*	*100%*
Kyuakpyu	*0*	*0*	*0*	*0*	*0*	*0*
Munaung	*0*	*0*	*0*	*0*	*0*	*0*
Ramree	*105*	*8*	*8*	*100%*	*8*	*100%*
Thandwe	*519*	*50*	*28*	*56%*	*28*	*100%*
Toungup	*80*	*23*	*18*	*78.3%*	*18*	*100%*
Rakhine Total	**2091**	**388**	**302**	**77.8%**	**302**	**100%**
Hlaingbwe	*239*	*33*	*30*	*90.9%*	*24*	*80%*
Hpa-an	*18*	*4*	*4*	*100%*	*3*	*75%*
Kawkareik	*0*	*0*	*0*	*0*	*0*	*0*
Myawaddy	*81*	*4*	*4*	*100%*	*3*	*75%*
Kayin Total	**338**	**41**	**38**	**92.7%**	**30**	**78.9%**
Grand Total	**5,636**	**533**	**439**	**82.4%**	**419**	**95.4%**

3.3.3h ***Results on case finding and management from Y2, Y3 and Y4 (Q1-2)***

During Y4, village based stratification (VBS) approach was used to guide case finding activities in most of the project townships in effort to streamline and maximize use of resources for case finding activities. The comprehensive package of interventions likely contributed to the decline of malaria cases, in spite of expansion of case finding and EDAT activities. Malaria Positive Rate (MPR) in Y2Q1 and Y4Q2 were 12.3% and 2.4%, respectively, representing an 80% reduction. Please refer to "Section B.3.3.d Intensified Case Finding (ICF)" for more details.

The increase in MPR in Y4 Q1 is due the Intensified Case Finding (ICF) activities in Ann township, Rakhine. Please refer to "Section B.3.3.d Intensified Case Finding (ICF)" for more details.

Figure 4: CAP-M Burma, Mobile & VMWs Case Finding and Treatment, Quarterly up to Y4 Q1



State and Region Wise Malaria Tested and Positive in Year 3 Mobile, VMWs & Screening Point

State and Region wise malaria tested and positive cases and MPR comparing results between FY3 Q1 & Q2 and FY 4 Q1 & Q2 were seen in the following graph. All of the State and Region had an increased number of total tested. Although number of positive cases was going down in Tanintharyi Region, in Kayin State the number of positive cases slightly increased and significantly increased in Rakhine State. In all 3 different geographical areas of CAP-M project, malaria positive rates ranged from 2.1% to 5.5% in FY4.

Figure 5: State/Region wise Total Tested, Positive and Malaria Positive Rate between Y4 Q 1&2 and Y3 Q1&2

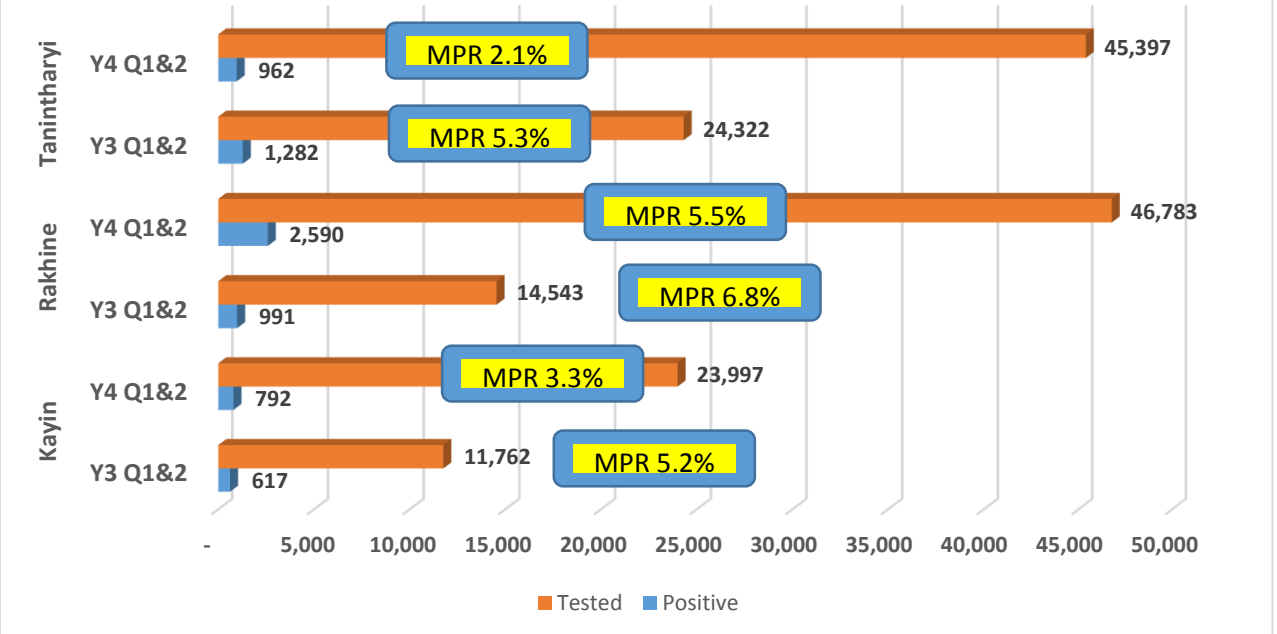
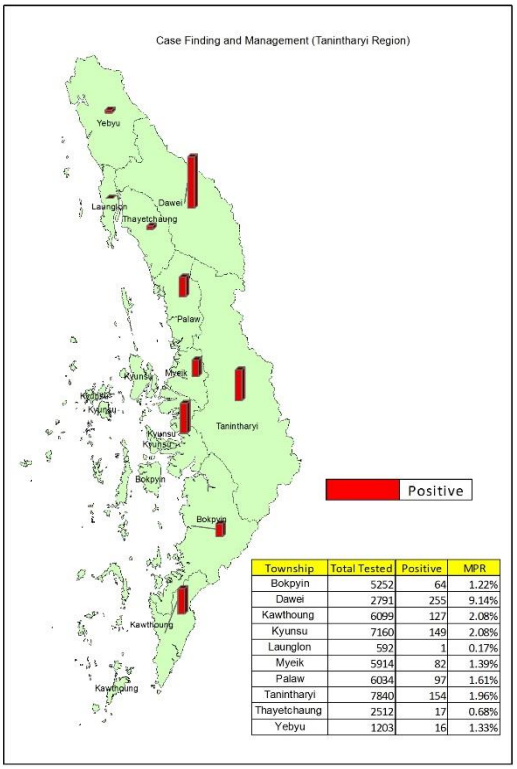


Figure 6: Maps showing Township wise Malaria positive cases in each State/Region, Y4 Q1-2

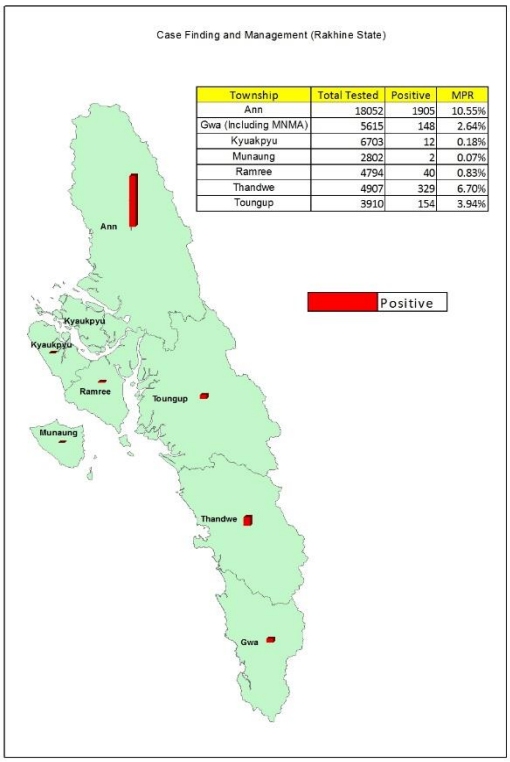
(Each map is shown in different scales)

Tanintharyi Region



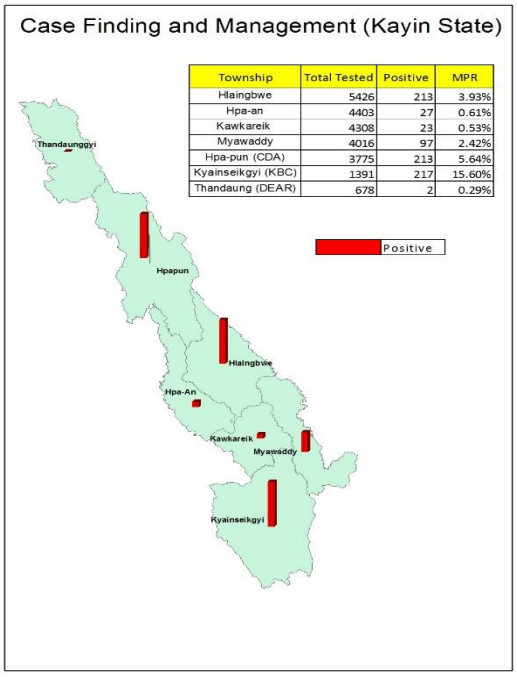
Township	Total Tested	Positive	MPR
Bokpyin	5252	64	1.22%
Dawei	2791	255	9.14%
Kawthoung	6099	127	2.08%
Kyunsu	7160	149	2.08%
Launglon	592	1	0.17%
Myeik	5914	82	1.39%
Palaw	6034	97	1.61%
Tanintharyi	7840	154	1.96%
Thayetchaung	2512	17	0.68%
Yebyu	1203	16	1.33%

Rakhine State



Township	Total Tested	Positive	MPR
Ann	18052	1905	10.55%
Gwa (Including MNMA)	5615	148	2.64%
Kyuakpyu	6703	12	0.18%
Munaung	2802	2	0.07%
Ramree	4794	40	0.83%
Thandwe	4907	329	6.70%
Toungup	3910	154	3.94%

Kayin State



Township	Total Tested	Positive	MPR
Hlaingbwe	5426	213	3.93%
Hpa-an	4403	27	0.61%
Kawkareik	4308	23	0.53%
Myawaddy	4016	97	2.42%
Hpa-pun (CDA)	3775	213	5.64%
Kyainseikgyi (KBC)	1391	217	15.60%
Thandaung (DEAR)	678	2	0.29%

Malaria species distribution in different project areas of CAP-M, Y2, Y3, and Y4 Q1

Along the same line as improving malaria situation (decrease case load), the proportion of *Pf* and Mixed infection also show declining trend since Y2, suggesting an improvement in malaria situation following scale-up implementation in target villages in Tanintharyi Region.

The proportion of *Pf* and Mixed infections remained high in Rakhine and Kayin. In an efforts to reduced *Pf* proportion in Kayin and Rakhine, a comprehensive package should be expanded including LLIN distribution, expanding EDAT, and DOT and follow-up of Pf, when possible.

Figure 7: Malaria parasites by species reported by CAP-M in Tanintharyi Region

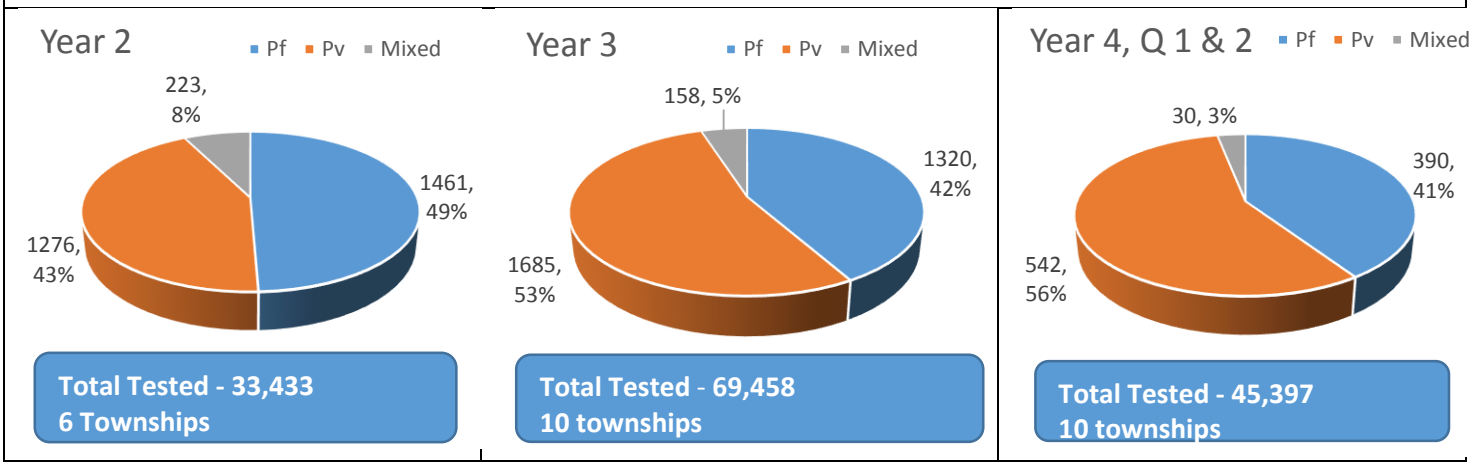


Figure 8: Malaria parasites by species reported by CAP-M in Rakhine State

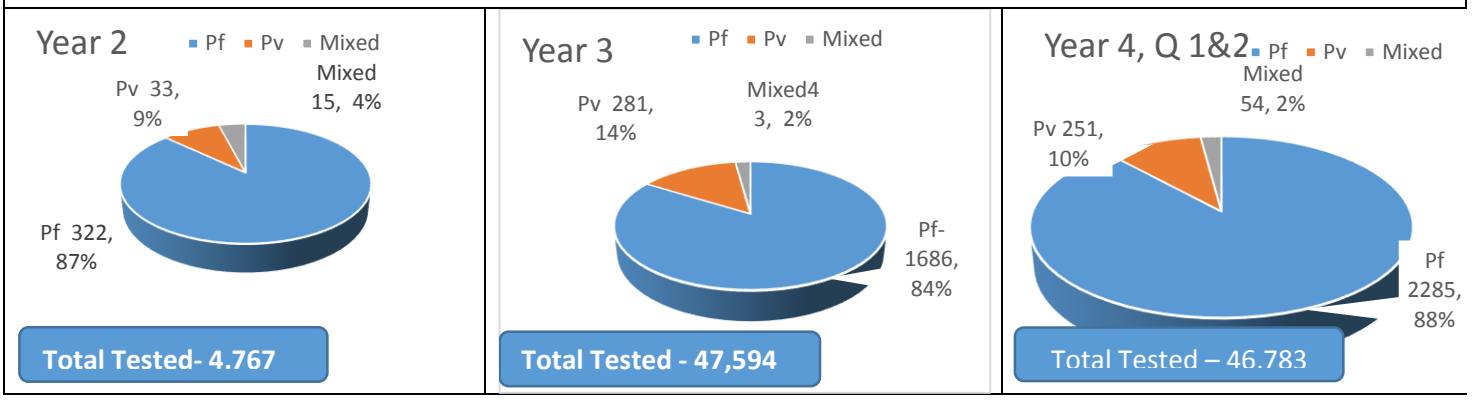
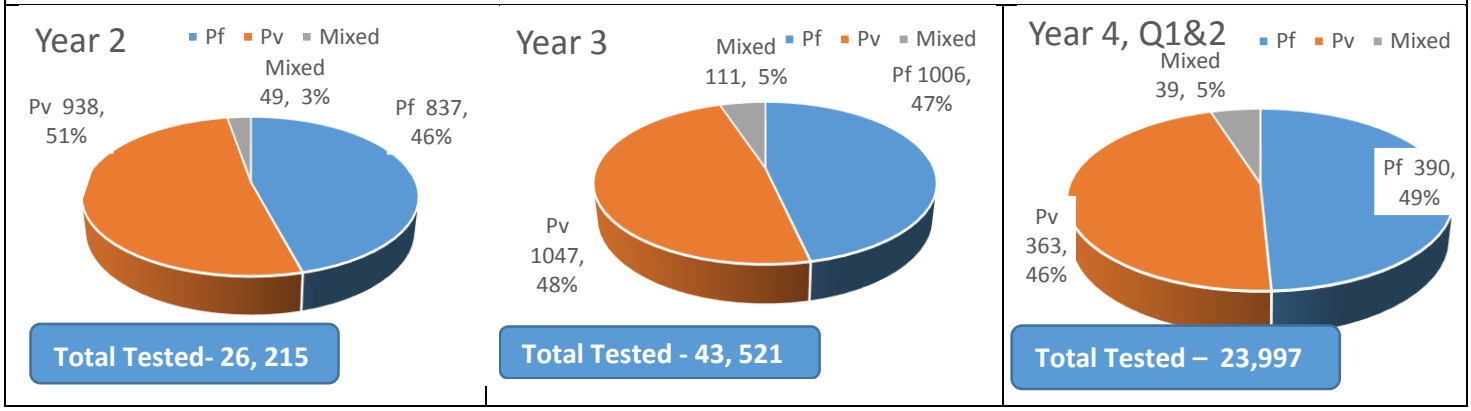


Figure 9: Malaria parasites by species reported by CAP-M in Kayin State



3.3.3i Monthly VMW discussion and monitoring

Monthly VMW/PP meeting was conducted in all 21 project townships. CAP-M township teams collect monthly reports from VMWs/PPs, check and replenish malaria commodities, and assess their performance and reporting, discuss on challenges and possible solution (e.g. DOT and slide preparation). On job trainings were given in some township.

Table 13: Number of VMW posted and reported by townships

No	Township	VMW/PP Post	Number of VMW/PP Reported							% of reporting
			Oct	Nov	Dec	Jan	Feb	March	Average	
1	Bokepyin	34	11	12	14	13	25	27	17	**50.00**
2	Dawei	34	32	29	28	26	26	27	28	**82.35**
3	Kawthoung	39	21	19	18	20	29	35	24	**60.68**
4	Kyunsu	34	23	19	19	19	27	23	22	**63.73**
5	Launglon	16	14	14	13	14	13	13	14	**84.38**
6	Myeik	28	23	23	24	26	23	21	23	**83.33**
7	Palaw	37	33	35	37	33	31	33	34	**90.99**
8	Tanintharyi	49	41	42	44	39	38	32	39	**80.27**
9	Thayetchaung	18	14	14	15	14	14	13	14	**77.78**
10	Yebyu	16	9	10	10	12	9	6	9	**58.33**
Tanintharyi Total		**305**	**221**	**217**	**222**	**216**	**235**	**230**	**224**	**73.28**
11	Ann	50	47	46	44	41	44	48	45	**90.00**
12	Gwa	40	36	33	37	35	29	33	34	**84.58**
13	Kyuakpyu	50	50	50	47	46	50	47	48	**96.67**
14	Munaung	40	40	40	37	37	39	38	39	**96.25**
15	Ramree	40	36	35	36	35	35	37	36	**89.17**
16	Thandwe	45	31	30	31	34	36	38	33	**74.07**
17	Toungup	52	43	39	43	45	43	46	43	**83.01**
Rakhine Total		**317**	**283**	**273**	**275**	**273**	**276**	**287**	**278**	**87.64**
18	Hlaingbwe	82	66	75	68	67	74	74	71	**86.18**
19	Hpa-an	84	64	66	60	67	63	66	64	**76.59**
20	Kawkareik	57	53	54	55	50	52	53	53	**92.69**
21	Myawaddy	28	26	28	26	26	26	25	26	**93.45**
SCI Total		**251**	**209**	**223**	**209**	**210**	**215**	**218**	**214**	**85.26**
22	Gwa (MNMA)	50		30	35	42	42	44	32	**64.33**
23	Hpa-pun (CDA)	43	24	11	39	36	33	33	29	**68.22**
24	Kyainseikgyi (KBC)	44						20	3	**7.58**
Sub-grant Total		**137**	**24**	**41**	**74**	**78**	**75**	**97**	**65**	**47.32**
CAP-M Total		**1010**	**737**	**754**	**780**	**777**	**801**	**832**	**780**	**77.24**

KBC has the weakest VMW supervision activities in the catchment areas likely due to the remoteness of their catchment areas. CDA and KBC operate in areas under the control of Non-State Actors, and often time security issues can delay field activities. CAP-M will continue to work with sub-grantees to address these operational issues, such as conducting multiple monthly meetings in different locations to reduce transportation barriers for VMWs. CAP-M Field Operation team and

sub-grant manager will also conduct field visits with sub-grant managers and field facilitators to provide additional coaching and technical support.

3.3.3 Malaria detection in pregnancy

B.3.3.3a. Treatment of malaria among pregnant women at public HF supported by CAP-M (October2014-February2015)

During Y3, CAP-M supported the integration of malaria services with antenatal care services following preliminary rapid assessment by Malaria Consortium and recommendation for PMI's partners to address malaria during pregnancy at the Cambodia-Myanmar-Thailand Cross-border Working Group Meeting in April 2013, in Yangon, Burma. CAP-M Team advocated with national program, and health departments at the State/Region, district and township level, and trained BHS staffs/Midwives in 96 health facilities in 6 townships. The initiative provided malaria screening service to 5048 pregnant (3 malaria cases identified) women who attended to BHS health facilities for antenatal care, as well as LLINs and HE package. In Y4 (Oct 2014 to Feb 2015), a total 4032 pregnant women were tested and 3 malaria positive cases (1 *Pf*, 2 *Pv, MPR 0.07%*) were identified.

In Y4 Q1-2, CAP-M tested 116,177 people (including pregnant women), which identified and treated 4,344 cases (See Activity B.2.3.b). Since the MPR among pregnant women screened during ANC service was quite low at 0.07%, CAP-M compared the MPR among pregnant women and women of reproductive age (14-49 years old female) screened through other approaches in the project catchment areas (e.g. VMWs, PP, mobile clinic), shown in Table 15 below.

Table 14: Malaria tested and positivity status of Pregnant Vs Non-pregnant reproductive age group in CAP-M target areas

Categories of women	**Total Tested**	**Total Positive**	**MPR**	**Remarks**
Pregnant women at ANC in 8 townships	4,008	3	0.07%	Through ANC at HF
Pregnant women (by VMWs, PPs, screening points and mobile clinics)	759	50	6.6%	Data from routine surveillance system by CAP-M
Non-pregnant women (15-49 years old)	26,063	585	2.2%	

Malaria is vulnerable for pregnant women as compared to that of non-pregnant women of reproductive age. The MPR among pregnant women and non-pregnant women through routine and mobile active case finding approaches done by VMW and CAP-M team were 6.6% and 2.2%, respectively, significantly higher than MPR among pregnant women screened at ANC. One explanation is that pregnant women who can access ANC may be in areas with lower malaria risks and also engage in lower risk activities. Pregnant women who access VMWs are in areas where malaria is endemic and often located in more rural areas at a distance from health facilities. CAP-M team selects worksites and villages in the furthest remote areas where there are transmission. Based on these project generated results, malaria screening through ante-natal care was discontinued in March 2015 with agreement from RDMA.

4. IR3. Use of Strategic Information for decision making increased at national, and local level

4.1. M&E of CAP-M Activities

Below are highlights activities that CAP-M has been implementing as part of M&E strengthening, some of these are in-line with RIG recommendations

(i) *Include additional analyses of the project's reported data for the semi-annual progress reports.*
(ii) *Quarterly updates of key project indicators will be submitted to USAID/RDMA*
(iii) *Changes in malaria situation, CAP-M will readjust Y4 plan and corresponding M&E plan. The updated M&E plan will also include the addition of M&E human resources.*
(iv) *Strengthen staffing capacity in M&E teams and field offices which include addition of key staff and M&E workshop and review at the quarterly staff meeting at Yangon office.*
(v) *Sustainability and exit plan has been part of CAP-M implementation. An exit plan to reflect current situation will be submitted in Q3 (end of May 2015).*
(vi) *CAP-M project information is already gender disaggregated. The project incorporate local contexts (including gender based factors) into the implementation. Technical consultant will also work with CAP-M team starting in May 2015.*
(vii) *Include additional analyses of the project's reported data for the semi-annual progress reports.*
(viii) *Quarterly updates of key project indicators will be submitted to USAID/RDMA*
(ix) *Changes in malaria situation, CAP-M will readjust Y4 plan and corresponding M&E plan. The updated M&E plan will also include the addition of M&E human resources.*
(x) *Strengthen staffing capacity in M&E teams and field offices which include addition of key staff and M&E workshop and review at the quarterly staff meeting at CAP-M Yangon office.*
(xi) *Quarterly updates of key project indicators will be submitted to USAID/RDMA*
(xii) *The updated M&E plan will also include the addition of M&E human resources.*
(xiii) *Sustainability and exit plan has been part of CAP-M implementation. An exit plan to reflect current situation will be submitted in Q3 (end of May 2015).*
(xiv) *CAP-M project information is already gender disaggregated. The project incorporate local contexts (including gender based factors) into the implementation. Technical consultant will also work with CAP-M team starting in May 2015.*

Strengthen the project staffing capacity in M&E and strategic information

Part of the M&E strengthening included the creation and recruitment of new key positions. In total, 9 new positions were created (at the Central and Region/state level) and filled (see summary below)

Table 15: Listing of new M&E positions and responsibilities.

Position	Duty Responsibility	Duty Station	Start Date	Remark
M & E and Field Technical Director	M&E + Field	Yangon	January	New Post
M&E Coordinator	M&E	Yangon	Recruited	

Assistant M&E Coordinator	M&E	Yangon	Recruited	Previously vacant
Lab Coordinator	BCC & (QA / QC)	Yangon	January	New Post
Field Operation Coordinator	M&E and Field Operation	Dawei	Recruited	New Post
Data Quality Officer	M&E	Tanintharyi Region	Recruited	New Post
Field Operation Coordinator	M&E and Field Operation	Taungup	Recruited	New Post
Data Quality Officer	M&E	Rakhine State	Recruited	New Post
Field Operation Coordinator	M&E and Field Operation	Bago(East)	Recruited	New Post
Senior Program Coordinator	M&E	Yangon	May	New Post
Senior Program Coordinator	M&E and Field Operation	Kayin	May	New Post

Project RDQA in Myeik Township, Tanintharyi Region

From 17th February 2015 to 21st February 2015, CAP-M, Burma M&E team (Dr. Ye Hein Naing, M&E Coordinator and Dr. Saw Simon, Data Quality Officer) visited Myeik field office.

Objectives of visit:

1. to verify the quality of reported data for indicators such as F-indicators of Myeik Township
2. to assess data management flow
3. to assess the roles and responsibilities of each and every township level staffs

DQA Team invited Tanintharyi and Palaw Township CAP-M Team leaders to join the DQA process, and also asking to carry documents specified by DQA Team. Team met with staffs and explained about the purpose of visit. Team explained to avoid double counting in training on the same title and also explained on F-indicators. Team also checked on stock and stock management, FY3 case finding and management through VMW and mobile teams from carbonless report, excel sheet data and compared with the FY3 annual data. On 19th February 2015, CAP-M, Burma M&E team visited Ywar Thit village and monitored on CAP-M private provider performance from M&E aspects. Team also checked LLIN distribution data (January 2014) of Kyunsu Township. One of the purposes of this team is to provide on job training to Data Quality Officer and Field staffs.

Following table is the key findings of RDQA at Myeik sub office conducted by M&E Coordinator together with DQO (Tanintharyi).

Table 16: Key findings of Internal DQA and monitoring visit to Myeik

Area of supervision	*Topics/ Activity*	*Findings*	*Recommendations*
Filing system	Check file storage system at the offices	Hard copies filed by activities and period, but in the same cabinet	Suggest to have separate cabinet for each township
Knowledge of staff	Interview staff	Staffs have understanding of their responsibilities.	
		Team Leader have good knowledge on operation, M&E, and reporting, but other field require training	Team Leader should plan for training of field staff with support from M&E team. M&E team should add this activity into M&E plan.
Data quality & completeness	Review source documents with database at each level	Some incomplete data in VMWs	On-the-spot check of VMW reports /registers at the monthly meeting.

			On-the-spot training and feedback.
Data Quality	Data discrepancy	Some data discrepancy between next level of aggregation	Each level should conduct data verification, to be included in the updated tools.
Data security		Some cabinets are not locked. Computer PC is not password protected.	Township staff has been instructed to install appropriate lock on cabinet and password on computer. Team leader will ensure recommendation is followed through and DQA officer will follow-up in the next monitoring visit.

4.2 Coordination and support of strategic information at townships, State/region and national levels

National level coordination

National level coordination was done through Technical Strategic Group Meeting and PMI Partners' Meeting. See details for TSG meetings in section B3.2.b.1

State/Region level coordination

Coordination meetings at the State/Region level are organized quarterly, where the Health Director serves as the meeting Chairperson. The meeting participants will include representatives from the State/Region Health Department, Township Medical Offices, and implementing NGO partners. The objectives are to improve malaria situation and performance of malaria control program through coordination and cooperation among implementing partners. The meetings provide the public health sector and implementing partners with the platform to sharing information about activities and update progress, in order to assess the programmatic gaps (e.g. geographically gaps, commodity gaps, resource gaps, performance gaps) for improvement. Partners engaged in discussions on the needs and recommendations for appropriate responses as reallocation of efforts and resources may be necessary. Products from these meetings include meeting reports or LLIN distribution (as determined by the partners) are developed and shared among partners.

Key issues that arose during State/Region Coordination meetings include:

- Tanintharyi Region
  - Discussion on geographical areas (down to the village level) and activities with the introduction of GF-RAI program in order to avoid overlapping resources and efforts. For example, GF-RAI activities and CAP-M have geographical overlap in 7 villages in Myiek township. Mechanisms were set up to clearly assigned VMWs and to avoid double counting. Because CAP-M already achieve high LLIN coverage in these villages, GF-RAI resources were then remobilized to cover LLINs gaps in other areas.
  - Tanintharyi will benefits from scale-up of LLIN distribution through NMCPs, the Tanintharyi Regional Health Director requested an updated LLIN gap analyses to be led by each Township Medical Offices with participation of NGO partners. Because CAP-M has already achieved high LLIN coverage in the target areas, CAP-M will distribute LLINs to non-project areas where LLIN gaps exist at the request of Regional Health Department and NMCP.

- CAP-M conducted coordination meeting with the Food and Drug Administration (Regional Level) on efforts to engage PPs. As a result CAP-M, with FDA and Regional Health Department, organized a series of advocacy workshops to education drug shop owners on Artemisinin resistance and promote compliance to NTGs.

- Rakhine Region
  - Lesson learned from VBS/ICF was shared among partners. VBS/ICF was expanded to non-CAP-M areas.
- Kayin State
  - CAP-M supported 2 rounds of Coordination Meeting in Kayin State, with Kayin State Health Department in October 2014 and March 2015. Because of diverse implementing partners which include Non-State Actors and local CBO based in Kayin and in Mae Sot, Thailand, more frequent coordination meetings are appropriate to discuss activities to minimize overlapping efforts, and assure safety and logistically challenges for continuous implementation in the areas.
- Bago East Region
  - Bago East Region is a new expansion site for CAP-M project, coordination meetings were conducted to identify target areas (villages in 3 target townships) based on malaria case information, health infrastructures, and existing gaps.
  - Bago VBDC showed that malaria morbidity rate is low. However, Annual Blood Examination Rate (ABER) in 2013 is low at 2.1%. Recommendations were made to analyze village level information to better understand and target efforts.

Township level coordination

Township level coordination meetings are usually conducted on a monthly basis (and as needed). The outputs of such coordination meetings include:

- Review of village level information for planning and implementation, and progress update
- Encourage for local ownership
- Coordination to avoid overlaps and maximize coverage in gaps areas with existing resources
- Plan for joint activities with township health officers (e.g. monitoring visits to HFs and VMWs, PPs and outreach activities)

4.3 Support Health system strengthening

4.3.1. Support Malaria TSG meeting

TSG Meeting on M&E Framework & National Strategic Plan

A TSG meeting was conducted on October 22, 2014 with the objectives to review and revise the M&E framework and National Strategic Plan (NSP). CAP-M Country Coordinator led the technical discussion on the M&E framework which included a consensus on the main section to be revised including the corresponding M&E activities that align with indicators. With regards to the NSP 2016-2020 to be prepared by WHO/Myanmar, the TSG made the following recommendations (1) to include the key reference points from the Global Malaria Control Strategy (GMCS), (2) to include strategy for sub-national pre-elimination.

TSG meetings on National Malaria Treatment Guideline

In August 2014, TSG met to discuss the need for a revision of the existing National Malaria Treatment Guideline (2011) and National Malaria Treatment policy. The TSG formed a Core Group to address this task with members from the NMCP, Department of Medical research, and invited implementing partners for preparation and development of draft National Malaria Guideline. CAP-M Country Coordinator was invited as member of the Core Group. The Core group prepared an updated draft National Malaria Treatment Guideline and presented to the TSG for feedbacks. The updated NTG included clear languages on the ban of Artemisinin monotherapy. In addition, it also include specific case management guidelines are provided for patient with 1st line treatment failure, mixed infection, pregnant women and infant, as well as stand-by treatment for migrants. To respond to emerging Artemisinin resistance, a guideline for Directly Observed Treatment (DOT) for *Pf* and mix infection. An extended TSG meeting on "**Peer Review Workshop for National Malaria Treatment Guideline**" will be conducted in April 2015 to finalize the draft National Malaria Treatment Guideline (2015) which will also include discussion on the appropriate dosage of Primaquine for both *Pf* and *Pv* treatment.

TSG meeting on National Country Consultation on Development of malaria Elimination Strategy (2016-2030) in GMS

The TSG meeting on National Country Consultation on Development of malaria Elimination Strategy (2016-2030) in GMS was held on February 5, 2015, in Yangon. The objectives are to review the second draft of the GMS Malaria Elimination Strategy paper and building consensus on key strategic objectives and criteria for prioritization of activities, as well as implementation approaches. The NMCP and stakeholders identified and discussed critical gaps including the need to be addressed to eliminate malaria by 2030, as well as possible solutions. CAP-M Village-Based approach was discussed as potential strategy in the country pre-elimination strategy.

4.3.2. Support NMCP for screening points

CAP-M has provided support to NMCP to operate malaria screening points in Bago Region. This activity will be removed from Y4 workplan as resources can now be leveraged from GF-RAI.

4.4 Access increased to strategic information

4.4.1 Use of project information to guide case finding and malaria control activities – Lesson learned from Ann Township in Rakhine State

CAP-M analyzed Y3 project data in Rakhine State as summarized in Table 15. Ann Township contributed 55% of total malaria cases in Rakhine, and 88% of them were *Pf* or mixed, suggestive of poor malaria control activities.

Table 17: Summary of malaria case finding activities conducted by CAP-M in Rakhine State (by township) in Y3. (Data from VMWs, PPs, and routine mobile clinics)

Township	**Tested**	**Positive**	***Pf***	***Pv***	**Mixed**	**MPR%**	**% of total positive**
Ann	9305	1110	973	109	28	11.9%	55.2%
Gwa	*8081*	*174*	*145*	*29*	*0*	*2.2%*	*8.7%*

Kyaukpyu	*11512*	*58*	*34*	*22*	*2*	*0.5%*	*2.9%*
Mauaung	*2799*	*14*	*11*	*2*	*1*	*0.5%*	*0.7%*
Ramree	*6453*	*299*	*213*	*79*	*7*	*4.6%*	*14.9%*
Thandwe	*3594*	*103*	*88*	*15*	*0*	*2.9%*	*5.1%*
Toungup	*5850*	*253*	*223*	*25*	*5*	*4.3%*	*12.6%*
Total	**47,594**	**2,011**	**1,687**	**281**	**43**	**4.2%**	**100%**

Then we further analyzed the area-wide malaria burden by comparing with Township Health Facility data (See Table 16). This also allowed us to identify potential malaria hot spots beyond our project areas. In addition to malaria case report, we then identified and prioritized areas (by RHCs and corresponding villages) for Intensified Case Finding activities by taking into account other factors. For areas with better accessibility and infrastructures, case finding through expansion of community level volunteers and health workers may be more appropriate. Based on the following table, we prioritized Da Lett RHC area to conduct ICF due to high MPR%, and poor accessibility to HFs, and large population of ethnic minorities.

Table 18: Summary of Health Facility based malaria cases in Ann Township, Jan-June 2014

RHC area	Tested	Positive	MPR%	Remarks
Sa Khan Maw	862	251	29%	2nd priority, accessibility to health facilities is better than Da Lett.
Da Lett	459	128	28%	Hard to reach, very difficult to go some of the villages, community not easily access to health facility, mainly Chin ethnic→ 1st Priority to conduct ICF
Rue	453	82	18%	4th priority
Tat Taung	630	165	26%	3rd priority
MCH	333	91	27%	5th priority
Thapyuchaing	87	8	9%	6th priority

Findings – During October 2014 ICF activities were conducted in 38 villages under Da Lett RHC. CAP-M and NMCP tested 4,558 people (97.3% of total pop) and **577 cases** (535 *Pf*, 30 *Pv*, 12 Mixed, 12.7% MPR) were treated according to the NTG.

During December 2014, ICF activities covered 20 villages (including 8 villages from previous ICF round and 12 new villages). A total of 1,662 people were tested and **218 cases** (202 *Pf*, 10 *Pv* and 6 Mixed, 13.1% MPR) were treated according to the NTG. Among the positive cases, 13 positive cases were same persons from 1st round positive cases. Re-infection is highly possible in high transmission area, however, resistant can't be ruled out.

(Left) CAP-Malaria mobile team on their trek to the villages under "Da Lett RHC". (Middle) Intensified case finding activities conducted during the day with villages. (Right) Team stayed until night time to make sure all people are screened including workers and forest goers. Photo: CAP-Malaria/Burma, March 2015.

Asymptomatic parasite carriers in Ann Township following ICF

Body temperature was taken for at least 10% of the people screened in each village. Among the 6,347 tested for malaria by RDT, body temperature were taken for 1,164 people (18.3%). Fever

patient is defined as person with ≥ 99°F or ≥ 37.2°C below that value. During ICF activity, more than 80% of villages are screened, thus allowing us to compare malaria case finding rate among symptomatic (fever) and asymptomatic (non-fever) patients between villages of known malaria risks. Findings are shown in the following table.

Table 19: Association between body temperature and MPR in different malaria status.

Malaria Village Status	# of villages	Fever			Non-Fever cases		
		Tested	Positive	%	Tested	Positive	%
Low malaria risk area (Village MPR <5%)	12	62	19	30.6	694	14	2.0
High malaria risk area (Village MPR ≥ 5%)	18	20	17	85.0	388	38	9.8

According to the findings from above Table 19, malaria contributed 30.6% among fever cases, and only 2% of non-fever cases in low malaria area. On the other hand, 85% of fever cases are contributed by malaria and up to 38% of non-fever cases in high malaria area. In high malaria burden areas, malaria screening of fever patients may not enough to detect malaria and to reduce burden of malaria. However, mass drug administration may not be justify as two-thirds of the non-fever cases are likely to have diseases other than malaria.

These findings reinforce CAP-Malaria approach to expand ICF in high malaria burden areas. In low malaria burden area, case detection should be done on persons presenting with fever and persons who have risk factors like migrants, forest workers, *etc.* ICF may not be cost-effective with low malaria prevalence areas.

Re-allocation of resources/ Re-programming – CAP-M Y4 workplan did not include LLIN distribution in Ann township. According to ICF results, CAP-M will reprogram Y4 activities and reallocate resources to include LLIN distribution in Ann township.

Future Plan – CAP-M will work closely with Ann township to improve on information collection and analyses, in order to scale up for impact and to eventual transfer such approaches to counterparts. Due to the large burden of malaria in Ann township as suggested by data collected from project, it is anticipated that CAP-M will need to expand the resources to previously non-project areas.

Case Detection and Positive in different category of population groups in Y4, Q 1-2

Table 20 summarized case finding activities under CAP-M project in Y4 Q1-2 and are disaggregated by gender, residency and age factors for better understanding of malaria risks. CAP-M tested 116,177 people (48% male) and among them 4,344 cases (60% male) were positive. By nature of the work, male population are more exposed to malaria risk and they contracted more malaria infection and they also have chance to get treatment. This is in agreement with our data that MPR is higher among male (4.7%) compared to female (2.9%). A thorough understanding of the gender-related dynamics of treatment seeking behavior as well as of decision-making, resource allocation and financial authority within households is key to ensuring effective malaria control program and

need to be explored. An expert external consultant will engage CAP-M team with gender analyses exercises in May 2015.

Table 20: Category wise people tested and positive cases, CAP- M Burma, Y4 Q 1-2

Category		Tested	Positive	MPR
Grand Total		**116,177**	**4,344**	**3.74%**
By sex	*Male*	*55,408*	*2,603*	*4.7%*
	Female	*60,769*	*1,741*	*2.9%*
By pregnant/non-pregnant (only reproductive age group)	*Pregnant*	*759*	*50*	*6.6%*
	Non-pregnant	*26,063*	*585*	*2.2%*
By migrant/resident	*Migrant*	*13,453*	*366*	*2.7%*
	Resident	*102,724*	*3,978*	*3.9%*
By age	*<5 year*	*16,224*	*886*	*5.5%*
	≥ 5 year	*99,953*	*3,458*	*3.5%*

Pregnant woman and her baby may be more susceptible to malaria disease because of the suppressed immune responses during pregnancy. The MPR among pregnant women and non-pregnant women were 6.6% and 2.2%, respectively. Approximately 74% of pregnant women with malaria are infected with *Pf* which can result in severe complications. Although *Pv* infection during pregnancy can associated with maternal anemia and low birth weight. According to the statistics from the National Maternal and Child Health Program, there are an estimated 25,000 pregnant women in CAP-M target areas each year (based on the total estimated population in CAP-M target area is ~1 million people). We estimate that approximately 19% of pregnant women had access to malaria services through CAP-M supported activities (if include integrated malaria and ANC services under CAP-M), and 3% of these were reached through routine case finding activities (e.g. VMWs, PPs, and mobile clinics) during this reporting period. Higher MPR observed in pregnant women and high MPR among children under 5 years old, suggest that CAP-M IPC should include specific messages to young mother or women of reproductive age.

The MPR in migrants and residents were 2.7% and 3.9%, respectively. A significant proportion of residents under project areas are living in villages in highly malarious area. CAP-M work in these remote villages that are far from formal health infrastructure and difficult for NMCP to implement malaria control. To reach worksite and remote villages, CAP-M mobile team often has to stay overnight in villages to distribute high coverage of LLINs or provide diagnostic and treatment services.

The MPR among <5 year and ≥ 5 year were 5.5% and 3.5%, respectively. Children < 5 years old are vulnerable to malaria infection and can experience severe morbidity and mortality. VMWs should be trained on integrated childhood management (e.g. ARI, pneumonia, and diarrhea) with malaria.

4.4.2 Development of village-based strategy (VBS) in CAP-M target areas.

Malaria transmission foci can be very local such that even within the same townships risk can vary significantly varies depending on various environmental and social factors. Because of this CAP-M developed VBS to better target activities at transmission foci during routine case finding activities. The ABER, the MPR and the Annual Parasite Incidence (API, positive per 1000 population-at-risk)

from Y3 project data were used to stratify villages based malaria case reported: high, moderate and low malaria risk villages.

VBS allows the team to streamline the implementation of targeted intervention according to malaria risks, as well as allowed for more effective guidance to the township operation teams and for more efficient project management (e.g. resource allocation and monitoring).

Table 21: Summary of CAP-M village stratification and responses

Village Stratification	Description	Responses	Remark
High risk	ABER ≥10% MPR ≥5%	Universal LLIN coverage and case finding (e.g. VMWs, PP, mobile clinic and ICF) (IRS is some areas with NMCP) DOT (if appropriate)	Advance control phase of malaria elimination
Moderate risk	ABER ≥10% MPR <5%	LLIN coverage and case finding (e.g. VMWs, PP, mobile clinics) in hot spots and hot pop. (IRS is some areas with NMCP) DOT (if appropriate)	Pre-elimination phase of malaria elimination
Low risk	ABER ≥10% API <1 per 1000 pop.	Intensive surveillance for quick response Case Investigation LLIN coverage for migrants Case finding (VMWs and PPs) DOT (if appropriate)	

Based on above stratification method, summary on township wise number of different malaria risk villages are shown in the following table.

Table 22: Township wise number of malaria risk villages and percentage number and percent of villages. *(Note: VBS in Kayin in being developed)*

Sr.	Township	Low risk		Moderate risk		High risk		Total
		No.	%	No.	%	No	%	
1	*Dawei*	*11*	*26.8*	*13*	*31.7*	*17*	*41.5*	*41*
2	*Thayetchaung*	*0*	*0.0*	*6*	*46.2*	*7*	*53.8*	*13*
3	*Longlon*	*6*	*66.7*	*3*	*33.3*	*0*	*0.0*	*9*
4	*Yebyu*	*5*	*55.6*	*2*	*22.2*	*2*	*22.2*	*9*
5	*Bokepyin*	*22*	*44.9*	*16*	*32.7*	*11*	*22.4*	*49*
6	*Kawthoung*	*16*	*38.1*	*21*	*50.0*	*5*	*11.9*	*42*
7	*Kyunsu*	*20*	*34.5*	*27*	*46.6*	*11*	*19.0*	*58*
8	*Myeik*	*36*	*61.0*	*19*	*32.2*	*4*	*6.8*	*59*
9	*Tanintharyi*	*12*	*19.0*	*25*	*39.7*	*26*	*41.3*	*63*
10	*Palaw*	*16*	*29.6*	*28*	*51.9*	*10*	*18.5*	*54*
	Tanintharyi Region	**144**	**36.3**	**160**	**40.3**	**93**	**23.4**	**397**
11	*Ann*	*9*	*18.8*	*8*	*16.7*	*31*	*64.6*	*48*
12	*Gwa*	*11*	*27.5*	*21*	*52.5*	*8*	*20.0*	*40*
13	*Kyaukpyu*	*31*	*63.3*	*15*	*30.6*	*3*	*6.1*	*49*
14	*Munaung*	*32*	*80.0*	*8*	*20.0*	*0*	*0.0*	*40*
15	*Ramree*	*12*	*37.5*	*10*	*31.3*	*10*	*31.3*	*32*
16	*Thandwe*	*16*	*48.5*	*8*	*24.2*	*9*	*27.3*	*33*

17	*Toungup*	*17*	*39.5*	*13*	*30.2*	*13*	*30.2*	*43*
	Rakhine State	**128**	**44.9**	**83**	**29.1**	**74**	**26.0**	**285**
	Grand Total	**272**	**39.9**	**243**	**35.6**	**167**	**24.5**	**682**

4.4.3 Intensified Case Finding (ICF)

For a complete ICF, more than 80% of the village population must be screened by RDT (or microscopy). (*Note that in a routine mobile malaria clinic, only symptomatic patients are screened for malaria*). During the day time, most of the people are not at home. The CAP-M mobile team need to plan an overnight stay to conduct the ICF activities.

Table 23: Intensified Case Finding in CAP-M Project Villages (Y4, Oct 2014-Mar 2015)

Township	# villages and worksites	Total Population	Tested	% Tested	Pf	Pv	Mixed	Positive	MPR%
Ann	*13*	*3519*	*1638*	*46.55%*	*70*	*0*	*2*	*72*	*4.40%*
Bokpyin	*7*	*535*	*451*	*84.30%*	*0*	*4*	*0*	*4*	*0.89%*
Dawei	*1*	*425*	*155*	*36.47%*	*0*	*1*	*1*	*2*	*1.29%*
Gwa	*12*	*2093*	*662*	*31.63%*	*12*	*3*	*1*	*16*	*2.42%*
Hpa-an	*2*	*685*	*585*	*85.40%*	*0*	*0*	*0*	*0*	*0.00%*
Kawkareik	*1*	*369*	*339*	*91.87%*	*0*	*0*	*0*	*0*	*0.00%*
Kawthoung	*3*	*491*	*405*	*82.48%*	*8*	*2*	*0*	*10*	*2.47%*
Kyunsu	*8*	*1866*	*1539*	*82.48%*	*41*	*15*	*0*	*56*	*3.64%*
Myawaddy	*1*	*202*	*165*	*81.68%*	*0*	*0*	*0*	*0*	*0.00%*
Myeik	*2*	*210*	*206*	*98.10%*	*0*	*4*	*0*	*4*	*1.94%*
Palaw	*2*	*411*	*295*	*71.78%*	*7*	*2*	*0*	*9*	*3.05%*
Ramree	*4*	*1041*	*633*	*60.81%*	*0*	*3*	*0*	*3*	*0.47%*
Tanintharyi	*2*	*661*	*514*	*77.76%*	*4*	*2*	*0*	*6*	*1.17%*
Thandwe	*11*	*3618*	*1158*	*32.01%*	*26*	*1*	*2*	*29*	*2.50%*
Thayetchaung	*1*	*306*	*207*	*67.65%*	*1*	*1*	*0*	*2*	*0.97%*
Munaung	*7*	*2848*	*987*	*34.66%*	*0*	*0*	*0*	*0*	*0.00%*
Toungup	*2*	*790*	*180*	*22.78%*	*0*	*0*	*0*	*0*	*0.00%*
TOTAL	**79**	**20,070**	**10,119**	**50.42%**	**169**	**38**	**6**	**213**	**2.10%**

Table 24: Intensified Case Finding in CAP-M Non-Project Villages (Year 4, October 2014-March 2015)

Township	# villages and worksites	Total Population	Tested	% Tested	Pf	Pv	Mixed	Positive	MPR%
Ann	69	24525	8148	33.22%	610	42	14	666	8.17%
Gwa	5	758	248	32.72%	0	0	0	0	0.00%
Kyunsu	11	634	581	91.64%	0	0	0	0	0.00%
Myeik	4	768	683	88.93%	0	0	0	0	0.00%
Munaung	4	818	416	50.86%	0	0	0	0	0.00%
Tanintharyi	5	772	651	84.33%	2	6	0	8	1.23%
Thandwe	19	4346	1379	31.73%	20	10	0	30	2.18%
Toungup	2	529	256	48.39%	6	0	0	6	2.34%
TOTAL	**119**	**33,150**	**12,362**	**37.29%**	**638**	**58**	**14**	**710**	**5.74%**

In non-project areas, about 96% of the positive cases were detected from Ann Township. It appears that Ann Township is the main contributor for positive malaria cases in Rakhine.

A total 23 worksites were covered by ICF where mobile & migrant population are present. Out of 2,202 tested, 48 were diagnosed and treated (35 *Pf*, 13 *Pv*). However, 70.8% of the positive cases were contributed by 3 worksites: Tarlay Work site in Kyunsu, Moe Ma Lin U Than Win Work site in Kyunsu, and Estate M, Yuzana Palm Oil plantation in Kawthoung (near the Thai-Burma border, where API in the rainy season can reached 147.68/1000 (based on CAP-M project data).

Intensified Case Finding at Estate M, Yuzana Palm Oil Company (Left), in TZK (Border) Rubber Plantation and 1st dose DOT with ACT and Primaquine (Middle), and in Maw Taung No. 6 village on the border with Thailand (Right). Photo: CAP-Malaria/Burma, Tanintharyi, March 2015.

4.4.4 Monitoring stock out of first line ACT (CAP-M)

Uninterrupted supply of antimalarial drugs (especially ACT) to the township level is arranged by Central CAP-M (Burma) and taking care of avoiding stock out at State/Region level. Distribution of quantity of ACT is based on Year 3 total *Pf* & Mixed positive cases.

At the field level, township CAP-M Teams also monitor any stock out of commodities on VMWs and private providers. Monthly monitoring on stock out in VMWs and private providers is being conducted in every township. Apart from checking stock on RDT and ACT during supervision and monitoring visits to VMWs and private providers, stock checking and replenishment of RDT and ACT is also done in monthly VMWs meeting. During this reporting period only stock out event was recorded. Starting Q3, stock monitoring (RDT and ACT) will included with the RDQA.

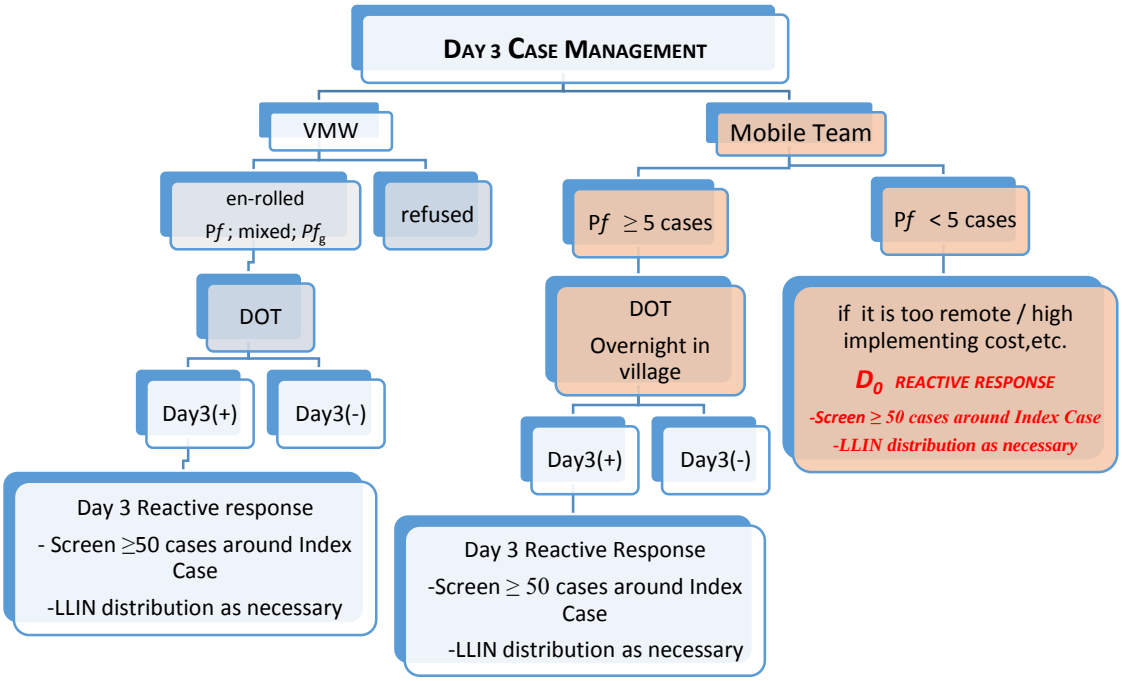
Apart from that no stock out was found on monitoring to total cumulative number of 879 VMWs and private providers.

The lack of information available to stakeholders when CAP-M started to implement project activities in Y2 and the expected long delay in procurement procedures, contributed to an oversupplies of malaria commodities (particularly RDT and ACT). For Y3/Y4 procurement, CAP-M utilized project information to forecast and needs of commodities to reduce the amount of unused and expired commodities, while avoiding stock-out at the project level.

4.4.5 D3 case management – DOT and Follow-Up

DOT and D3 case management activity is pro-active strategy to eliminate *Pf* resistant parasite foci, and mainly implemented in Tier 1 (confirmed resistant area). Although Rakhine State is in Tier 2, CAP-M has introduced this activity in Rakhine State because of high *Pf* prevalence (> 80%). This activity is usually carried out by VMWs because their presence in the village allow for DOT and patient follow-up (FU) for Day 3 blood slide preparation. Not all *Pf* or mixed cases identified by the VMW can be enroll in this activity. For example, patients may be migrants or passed-through the villages for malaria service only. CAP-M mobile team will also provide DOT and D3 case management in situation where $\geq$5 cases of *Pf* and mixed cases are found.

Figure10: Decision chart for D3 case management and follow-up responses



In the event that D3(+) case is found, the CAP-M team will conduct additional case detection surrounding the index case, conduct LLIN census and top-up among those screened. Summary of DOT and D3(+) case detection is seen in the following table.

Table 25: Day 3 positive case detection, Y4 Q1-2

Township	Total Tested	D0 total Positive (Pf or Mixed)	D0 Positive Enrollment for D3 FU	1st Dose DOT + PQ	DOT 6 Doses Completed Cases	Day 3 FU Cases	Day 3 Positive Cases
Ann	*701*	*85*	*82*	*82*	*80*	*80*	*0*
Bokpyin	*112*	*6*	*6*	*6*	*6*	*6*	*0*
Dawei	*127*	*6*	*6*	*6*	*1*	*4*	*0*
Kawthoung	*900*	*27*	*22*	*22*	*20*	*17*	*1*
Kyunsu	*261*	*20*	*20*	*20*	*20*	*18*	*3*
Myeik	*685*	*25*	*22*	*22*	*7*	*20*	*1*
Palaw	*99*	*16*	*7*	*7*	*7*	*7*	*0*
Tanintharyi	*167*	*1*	*1*	*1*	*0*	*1*	*0*
Townships	**3,052**	**186**	**166**	**166**	**141**	**153**	**5**

In Y4 Q1-2, CAP-M Burma conducted this activity in 8 townships covering 24 villages and 11 worksites. The enrollment rate among *Pf* and mixed cases was 89.2%, all of whom received 1st dose of DOT. Among those that received DOT, the VMWs were able to achieve 84.9% DOT for full-treatment course (6 doses of Artemether + Lumifantrine), while 92.2 of those enrolled were

(Left) Night time screening of people who resides near the Day 3+ patient. (Right) CAP-Malaria Microscopist checking Day 3 slides. Photo: CAP-Malaria/Burma, March 2015

successfully followed-up on Day 3 Day 3(+) rate under CAP-M was 3.3% (compare to 12% Day 3(+) in Tanintharyi, data from DMR).

Table 26: Summary of D3(+) detection results and responses

Patient ID	Village	Day 3+ result	Positive Date	Screened	Positive	Response	LLINs distributed
SD	Thar Ko Kwee (Non-State Actor area)	*Pf*	26-9-2014	CAP-M was not allowed to conduct further activities due to changes in KNU leadership			
MP	Moe Malin village, Kyunsu	*Pf* gam	13-12-2014	111	0	89% of village screened on D0	
AAS		*Pf* gam					
AAM		*Pf* gam					
KZO	Kawthoung	*Pf*	24-1-2015	108	1 *Pf*		103

4.4.6 Entomology survey

Entomological Activities Myitta sub-township, Dawei, October 2014 & January 2015

- Htee Hta village is 105 miles away from Dawei Town. It is situated in the west of foothill area of Mel Ba Lar and Min Tha Mee mountain ranges and in the east of the Tanintharyi River and Tanintharyi Mountain range. The malaria endemicity is high.
- War Taw village is situated in the foothill area, beside the Sin Phyu Tine mountain range. Sin Phyu Tine stream winds from north to south toward the village. In War Taw Village, the topography and climatic condition favor malaria transmission throughout the year.

Table 27: Entomology survey results in Htee Hta Village, Oct 2014 & Jan 2015

Method	Month	Indoor	Outdoor
Human landing catches	October	2 *An. minimus* (0.05 per man hour) (11pm-1am), 1 *An. maculatus* (0.02 per man hour) (8pm-9pm)	6 *An. minimus* (0.16 per man hour) (9pm-11pm)(1am-2am)
	January	No *Anopheles* was caught.	12 *An. minimus* (0.16per man hr.) (6pm-7pm; 9pm-3am); 1An.maculatus (0.01 per man hr)
CDC Light trap	October	No mosquito caught	No mosquito caught
	January	10 *An. minimus* (8pm-9pm)	4 *An. minimus* (8pm-9pm)
Morning Indoor space spray	October	Nil	NOT RELEVANT
	January	Only *Culex* mosquito	
Animal bait net trap	October	NOT RELEVANT	7 *Anopheles* species; 4 *An. dirus* (9pm-1am), 9 *An. minimus* (8pm-3am), 5 *An.maculatus*, 7 *An. kochi*, 25 other 3 species
	January		62 *An. minimus* (6pm-4am), 40 *An. maculatus*, 28 *An. hyrcanus*, 18 other 3 species

During October because of post monsoon, flooded water are also present and because of turbulent flow, *An. minimus* couldn't breed in the stream but in January, it could breed in the stream.

An. minimus is predominant both in October 2014 and January 2015 in Htee Hta Village. Total number of *An. minimus* species caught by different methods was significantly higher in January 2015

(62 *An. minimus). An. minimus* is relatively outdoor biter. Indoor human landing catches and indoor CDC light trap collected *An. minimus,* suggesting high density of *An. minimus* could be found indoor.

Table 28: Entomology survey results in War Taw Village, Oct 2014 & Jan 2015

Method	Month	Indoor	Outdoor
Human landing catches	October	**6An. dirus (0.17 per man hour) (8pm-4am)**	**7An,dirus (0.19 per man hour) (6pm-12 midnight)**
	January	**1An.minimus (0.013 pmh) (8pm-9pm)**	**8 An.minimus (0.11per man hr.) (6pm-8pm; 10pm-12midnight);** 1An.maculatus (0.013 per man hr) (6pm-7pm)
CDC Light trap	October	**1An.dirus (8pm-9pm)**	No activity
	January	**3 An.minimus (9pm-10pm)**	1 An.maculatus (8pm-9pm)
Morning Indoor space spray	October	4Culex & 3Aedes	NOT RELEVANT
	January	No mosquito was caught	
Animal bait net trap	October	NOT RELEVANT	5 Anopheles species; **37An.dirus** (6pm-4am), **4An.minimus** (7pm-11pm, 2am-3am), 8An.maculatus (6pm-9pm, 11 pm-2am), 7 An.kochi(6pm-8pm, 3am-4am) , 3An.barbirostris
	January		**18. An.minimus** (6pm-12 midnight), 14. An.maculatus (6pm-10pm)

We found that *An. dirus* breeds in rain water retained in car wheel tracks and water is clear, under sunlit and presence of floating vegetation.

During January, a total 46 *Anopheles* including 30 and 16 *An. maculatus* were caught. Approximately 60% of *An. maculatus* are parous showing successful gonotrophic cycle and possible to transmit malaria.

During raining season, *An. dirus* tend to drive malaria transmission and it breeds in places of small like water wells and tire tracks. During post monsoon, the streams become slow running water and suitable breeding place for *An. minimus*. Because of that, *An. dirus* prevalence was relatively high as compared to *An. minimus* in October, and in January *An. minimus* tend to drive transmission.

The bioassay test with *An. minimus* on two Power Net (LLIN) showed mortality rates of 62.5% (after 1½ years used LLIN) and 100% (after 7 months used LLIN).

Susceptibility tests using 0.05% Deltamethrin, 0.75% permelthrin and 4% DDT results showed 100% mortality rate by *An. minimus* and *An. maculatus in Htee Hta and by An. maculatus in War Taw Village.*

5. IR4: Malaria control services for mobile populations strengthened through interagency and inter-country collaboration.

5.1 Enabling environment strengthened

5.1.1 Disaster risk management

CAP-M responded to an emergency request from Palaw Township Hospital, Rakhine State, to assist in residents **in Mi Chaung Theik** Village stricken by severe flood. CAP-M distributed LLINs to 656 people resided in 167 households in March 2014 covering 100% population. Approximately 80 household members had to move to a temporary shelter at the village school. In October, CAP-M mobile team visited Mi Chaung Theik village with Red Cross and the fire brigade to distribute LLINs. The mobile team also screened 38 people and 2 *Pv* cases were detected and treated.

(Left) A team consisting of CAP-Malaria staff together with the Red Cross and the Fire Brigade officers travelled the assist flood victims from Mi Chaung Theik village. (Right) CAP-Malaria staff distribute new LLINs to residents who lost their older LLINs during the flood. Photo: CAP-Malaria/Burma, April 2015.

(Left and Right) CAP-Malaria staff, led by Dr. Ei Ei Win Aung, on their way to Ban Khar village, a remote village in Palaw township, Rakhine State. Photo: CAP-Malaria, April 2015

While assisting the flood victims in Mi Chaung Theik village, CAP-M staff learned of another isolated village approximately 4 hours walking distance from Mi Chaung Theik village. The CAP-M mobile team travelled to Ban Khar village, a hard-to-reach hot spot to conduct case detection and treatment. Out of 65 people tested in Ban Khar village, a total of 17 people all of whom were asymptomatic and were identified and treated according to the NTG (13 *Pf*, 3 *Pv* and 1 Mix, MPR 26.2%).B. 4.2 Country level support and coordination to increase cross border twin-city collaboration.

5.1.2 Twin-cities collaborations

CAP-M has been supporting twin-cities collaborations between Kawthoung and Ranong (Thailand) since 2012. The coordination began with advocacy and local twin-cities meetings to develop joint recommendations for twin-cities activities to strengthen malaria control at the borders. The recommendations were further endorsed by the national programs of Thailand and Burma. These recommendations included regularly twin-cities, meetings to follow progress on joint recommendations, capacity building of health staff through joint training and exercises, exchange visits between counterparts, monthly exchange of malaria information (with recommendations to start sharing other communicable diseases), and coordinated community outreach activities. In Y3, CAP-M facilitates further expansion of twin-cities collaborations to engage not only the provincial levels but also the district and community levels.

One of the recommendations for coordinated activities is to expand the network of VMWs in the border areas. CAP-M/Thailand identified Burmese migrant workers in the target villages in La-un districts and Kraburi districts to serve migrant communities working and residing in Thailand. The twin-cities activity is to assist Thai team to properly trained VMWs. Migrant volunteers (MVs) training was conducted in La Un Health Promotion Hospital, Ranong Province in 16th to 17th September 2014 for 35 MVs (21 male, 14 female).

CAP-M started to support Buddy Volunteer network between VMWs (Kawthoung) and MV (Ranong) to serve residents and migrant workers living and working on both sides of the borders. Volunteers are at the frontline of malaria control and preventions, this is particularly important along the borders where formal health system can be more scattered. The objectives for Buddy Volunteers are (1) mobilize communities on the borders on malaria awareness and engagement in

malaria control; (2) inform health workers of local events, activities, or situations that may have an effect on health, (3) motivate migrant volunteers to stay engaged while living or working on either sides of the borders; and lastly (4) potential for expanding access point where malaria patients can complete DOT and FU.

The cross border volunteer network has been meeting on a bi-monthly schedule since September 2014. On December 5th CAP-M (Thailand and Burma), with participation of Malaria Inspector from Kawthoung, conducted joint community awareness raising activities and conducted monthly exchange of information. Volunteers based in Kraburi and Kawthoung joined efforts to conduct outreach HE activities during the annual Had Jick Boat Race in Kraburi District, which was attended both Thai and Burmese communities along the Kraburi River. Thai and migrant volunteers in Kraburi and Burmese VMWs from Kawthoung Bi-lingual health education and engages festival participants with questions and answers sessions about malaria. Volunteers also distributed CAP-M T-shirts with malaria messages and distributed about 300 malaria educational pamphlets.

Volunteers from Kawthough (Burma) and Kraburi (Ranong) conducted joint promotion of malaria awareness in the morning during the annual boat race festival in Had Jick, Kraburi. (Left) CAP-M staff interview a Burmese mother about malaria during group talk. (Right) In the afternoon, the volunteers head a meeting to discuss their volunteers activities back home, update on malaria and health situation in their villages. Photo: CAP-Malaria/Thailand and Burma, March 2015

In the afternoon, cross border volunteer network meeting was conducted facilitated by CAP-M. VMWs shared the updated contact information and discussed about sharing malaria information, as well as mean of cross-border communication. The following suggestions resulted from the cross-border volunteers meeting:

- Send informed SMS mentioning new phone number to buddy VMW, focal person of CAP-M in Thailand and Burma. Informed other VMWs if they change their contact number to new one.
- Buddy pairing of VMWs in Ranong and Kawthoung that are geographically close to one another.
- Share basic malaria information informally to their buddy VMW monthly through phone call.
- Buddy volunteers network agreed to meet on bi-monthly basis, alternating the location between Kawthoung and Kraburi

Annex 1: Performance indicators (from October 2014 to March 2015)

Indicator	Oct 14 - Mar 15	
	FY4 Annual Target	Actual
Output Indicators		
IR1: use of preventive measures increased among population at risk in CAP-M target areas		
OP1F Number of ITNs purchased by other partners that were distributed with USG funds	-	-
OP2F Number of ITNs purchased in any fiscal years with USG funds that were distributed in this reported fiscal year	150,000	71,896
Through campaign	-	*61,718*
Through health facility	-	*3,683*
Through the private commercial sector	-	*6,495*
OP3 Number of nets impregnated with USG support	-	2,752
IR2 Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in CAP-M target areas		
OP4F Number of health workers trained in case management with Artemisinin-based combination therapy (ACTs) with USG funds	850	529
Male	-	*176*
Female	-	*353*
Number of health facility workers trained	*300*	*252*
Number of community-level workers trained	*420*	*257*
Private providers	*130*	*20*
OP5F Number of health workers trained in malaria laboratory diagnostics (rapid diagnostic tests (RDTs) or microscopy) with USG funds	880	554
Male	-	*195*

Female	-	*359*
Number of health facility workers trained	*330*	*277*
Number of community-level workers trained	*420*	*257*
Number of outreach workers trained	*130*	*20*
OP6F Number of Artemisinin-based combination therapy (ACT) treatments purchased by other partners that were distributed with USG funds	-	-
OP7F Number of Artemisinin-based combination therapy (ACT) treatments purchased in any fiscal year with USG that were distributed to health facilities in this fiscal year	-	11,340
OP8F Number of RDTs purchased in any fiscal year with USG funds that were distributed to health facilities in this reported fiscal year	-	130,275
OP9 Number of malaria tests performed	**250,000**	**116,177**
Disaggregated by Age		
Age < 5	-	*16,224*
Age => 5	-	*99,953*
Disaggregated by Sex		
Male	-	*55,408*
Female	-	*60,769*
Disaggregated by Pregnancy status (*female* only)		
Pregnant	-	*759*
Not pregnant	-	*26,063*
Disaggregated by provider		
Reported by Health facility	-	-
Reported by VMW	-	*48,754*
VMW supported by CAP-M	-	*67,423*

VMW supported by CNM	-	-
OP10 Number of positive tests	**10,000**	**4,344**
Disaggregated by Age		
Age < 5	-	*886*
Age => 5	-	*3,458*
Disaggregated by Sex		
Male	-	2,603
Female	-	1,741
Disaggregated by Pregnancy status (female only)		
Pregnant	-	*50*
Not pregnant	-	*585*
By species		
Number of Pf cases	-	*3,065*
Number of Pv cases	-	*1,156*
Number of P mix cases	-	*123*
Disaggregated by provider		
Reported by Health facility	-	-
Reported by VMW	-	*2,669*
VMW supported by CAP-M	-	*1,675*
VMW supported by CNM	-	-
OP11 Number malaria cases treated	-	4,330
Disaggregated by Age		

Age < 5	-	*879*
Age => 5	-	*3,451*
Disaggregated by Sex		
Male	-	*2,594*
Female	-	*1,736*
Disaggregated by provider		
Reported by Health facility	-	-
Reported by VMW	-	*2,655*
VMW supported by CAP-M	-	*1,675*
VMW supported by CNM	-	-
Other project indicators		
IR1: use of preventive measures increased among population at risk in CAP-M target areas		
OP12 % of migrant worker having ITN	-	-
Number of migrants having ITN	-	-
Number of migrants interviewed	-	-
OP13 % of individuals having ITN	-	-
Number of individuals having ITN	-	-
Number of individuals interviewed	-	-
OP14 Number of individuals reached with BCC messages through interpersonal communication (IPC) in CAP-M target areas	250,000	284,220
Male	-	*132,124*
Female	-	*152,096*

IR2 Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in CAP-M target areas		
OP16 % of Pf cases followed up	90%	92%
Number of Pf cases followed up	-	*153*
Number of PF cases enrolled	-	*166*
OP18 % of Pf patients receiving complete DOTs	-	95.4%
Number of Pf patients receiving DOTs	-	*419*
Number of Pf patients enrolled	-	*439*
OP19 Number of health facilities with microscopy QA system in place		-
Outcome indicators		
IR1: use of preventive measures increased among population at risk in CAP-M target areas		
OC1 % of residents in CAP-M targeted areas who slept under an ITN the previous night	80%	81%
Number of residents in CAP-M targeted areas who slept under an ITN the previous night		7885
Number of residents interviewed		9749
OC2 % of migrants/migrant workers in CAP-M targeted areas who slept under an ITN the previous night	-	36%
Number of migrants/migrant workers in CAP-M targeted areas who slept under an ITN the previous night		47
Number of migrants/migrant workers interviewed		129
IR2: Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in CAP-M target areas		
OC3 % of uncomplicated malaria cases treated according to national malaria treatment guideline in CAP-M target areas	100%	99.95%
Number of uncomplicated malaria cases treated according to national malaria treatment guideline in CAP-M target areas		4330
Number of uncomplicated malaria cases treated		4332

OC4 % of service delivery points experiencing stock out of ACT	4%	0%
Impact indicators		
IP1 Rate of confirmed malaria cases per 1,000 population	7.00	5.01
Number of confirmed cases		*4,344*
Population		*867,248*

5. Success Stories

1. Information is key to delivery of CAP-Malaria services

Key Issues: Malaria

Operating Unit: CAP-Malaria, Thandwe Team, Rakhine State, Myanmar

Thandwe, with the beautiful Ngapali Beach in Southern Rakhine State, is one of the implementing townships of CAP-Malaria. Generally, Rakhine is one of the high malaria transmission areas in Myanmar; however, some parts become reduced in malaria burden and others are remote, hard to reach with high malaria prevalence according to annual malaria data from National Malaria Control Program (NMCP) and CAP-Malaria. CAP-M Thandwe team covers 45 villages to carry out malaria prevention and control activities with the purpose of using strategic information including coordination and supporting NMCP and Ministry of Health. CAP-Malaria utilizes strategic information to guide the selection of malaria hotspots in order to deliver malaria services where services are needed the most.

Daw Than Myint, a villager from Pu Yitt village, received a LLIN from a CAP-M team leader.

CAP-Malaria employed strategic information to prioritized areas of needs to implement malaria prevention and control activities. To prioritized villages, CAP-Malaria utilized CAP-Malaria project data (disaggregate for 45 villages under project areas) to identify hot spots and hot population. Then CAP-Malaria layer the Health Facility based malaria information to try to stratify risk areas. Other factors such as remoteness and availability of health facilities also added into the prioritization process. Based on this exercise, CAP-M team identify 5 remote villages to initiate the Intensified Case Finding (ICF) activity in cooperation with NMCP staffs and basic health staffs (BHS) in selected five remote villages. Among the five selected villages, only one village is under coverage of CAP-M, the others under Global Fund coverage area.

Case finding in Mel Wa.

In January 2015, team members consisted of 2 NMCP staffs, 2 BHSs and 2 CAP-M staffs embarked on a 5-days trip. Team travelled for 4 hours on the motorbike, boat, and foot to reach the first target village. In all, the team provided malaria screening and treatment to malaria cases, and health education on malaria prevention and appropriate treatment to approximately 2,230 in five villages were reached, and provided malaria test for 904 suspected cases. Total of 58 people were diagnosed with *Plasmodium falciparum*, 98% of total malaria cases, suggesting the lack of access to malaria control and prevention program. The strategy appears to be a useful exercise to help guide resources to target case-finding activities.

In March 2015, CAP-Malaria team returned for a follow-up visit to the same villages to distribute LLINs to the population and provide addition test and treatment services. The use of LLINs was emphasized to the villagers since they are a long way from any formal health facilities.

"*Now I know that malaria is caused by mosquito bites and that using insecticide treat nets can help me from getting bitten and from getting malarial. Ma Yin (Yin Yin Aye, CAP-M volunteer) and CAP-M team gave me and my family bed nets (LLINs), I couldn't afford to buy bed net before. I promise that my family would use the net to sleep and I am going tell other villagers to do the same (sleep under LLIN).*" – Daw Than Myint, a resident from Pu Yitt village.

"*My son is sick. I gave him (local) medicine, but it did not work well. I am very happy to see the CAP-M team because I think my son has malaria. I recognize the (malaria) symptoms from what the team told us last time. I'm really grateful to CAP-M team traveling so far to visit us*". – Aung Ye Lin's mother, Sin Man village

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2. Immunization Program and Malaria Control Program joined forces in Hlaingbwe township, Kayin State

Key Issues: Provision of health services by joint activity of CAP-Malaria Project and Immunization Program of DOH

Operating Unit: CAP-Malaria, Hlaingbwe township, Kayin State, Burma

Some villages in Hlaingbwe township are the conflicted areas and so, health services provided by government cannot reach to these villages. These villages are hard to reach areas and uncovered by basic health staffs. Moreover, the villagers didn't believe government staffs and services provided by basic health staffs as they follow the instruction of KNU which is always fighting with government in the past. Therefore, basic health staffs could not go to these villages because of high transportation costs and hard to build trust with villagers & village leaders.

Poor roads can make travel to remote villages difficult.

Noe Doe is one of the villages under CAP-M program since 2014 and located in the conflict areas of Hliangbwe township. Residents have a difficult time access local health services, as they have been disrupted by the sporadic fighting. As ethnic minorities, residents are often hesitant to seek services from public health facilities under Ministry of Health. CAP-Malaria project has been providing malaria services such as referral system, interpersonal communication health

education, early diagnosis and treatment services (EDAT), and malaria outreach activity at school. Through 3 CAP-Malaria trained local volunteers added to the trust-building processes. CAP-Malaria negotiated with village chief and basic health staffs after learning about poor immunization coverage (along with low LLIN coverage) to provide MMR immunization to the village along with CAP-Malaria outreach activities. This Villagers were provided with information on malaria and other preventable diseases through efforts of the CAP-Malaria staffs and leveraging local resources.

A villager in Noe Doe said, *"In my village, I never saw government people immunizing our children. We had to cross the Thaung Yin River (to Thailand) if we wanted immunization for our children. It is a difficult trip for children. I also do not experience government people coming here to give us LLINs. Now we have information about malaria and diseases, we have nets to sleep in, our children are vaccinated. I'm delighted and thankful to CAP-Malaria."*

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