Benefits to National Malaria Programs

From Regional Support: The Cambodia Case

Dr Char Meng Chuor

National Center for Malaria, Parasitology Entomology (CNM)

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SUMMARY

This paper highlights the Cambodia’s perspectives on current situation of the nation’s malaria burden and response, including artemisinin resistance and associated programmatic challenges. These are discussed in the broader context of malaria elimination in the Asia-Pacific region, with emphasis on the challenges faced in mobilizing additional resources from both internal and external resources. It proffers recommendations that could be considered in the context of both national and regional mechanisms to finance and achieve malaria elimination.

The topography of Cambodia with 57% forest coverage though favourable to malaria transmissions does not necessarily preclude achievement of malaria control and elimination. Malaria and other vector borne diseases remain a high priority for the government. Political commitment to eliminate malaria by 2025 is strong, with clear personal support by the Prime Minister.

Despite the significant decline in the incidence of malaria over the past decades, in terms of confirmed cases and deaths, Cambodia remains a relatively high-burden country in the South East Asian Region. The Government of Cambodia believes this is unacceptable. Artemisinin resistance containment efforts (2008-2011) have been largely successful in Pailin province; however, treatment failures of ACT have been observed in a number of other provinces, necessitating an enhanced and evidence based response. As the proportion of cases caused by plasmodium vivax have increased, so the challenges of effective treatment with Primaquine become starker; particularly given recent evidence indicating a high prevalence of G6PD deficiency in Cambodia. In addition, limited access to effective malaria interventions by the increasing migrant worker and mobile populations has to be addressed for malaria elimination aspirations to be realized.

In terms of malaria and other vector borne diseases programs under CNM, the national malaria program enjoys high levels of political commitment from the central to the provincial level. The malaria program is increasingly integrated into the national health care system with operations decentralized to the village level. This aims to provide a more effective response to public health threats, including artemisinin resistance.

Increasing government ownership of the health care financing agenda is also evident. There has been a four-fold increase in government financing of health care services over the past decade in Cambodia. This level of government contribution to health sector is among the highest in the region. However, it should also be noted that only 5-9% of total malaria financing came from government resources over the past 5 years.
The adoption of a multi-sectorial approach to address malaria in Cambodia has been very rewarding. Private sector engagement has been strong with the drug regulatory authority, NGO social marketing, private enterprise and private outlets collaborating effectively. However, more efforts are required to engage other health related sectors such as the Ministry of National Defence, Agriculture and Industry among others, in a sustainable manner.

Cambodia has enjoyed significant contributions from external development partners in its efforts to reduce the burden of malaria over decade. Noteworthy is the successful BMGF supported Artemisinin Resistance Containment and Elimination (ARCE) Project. This was implemented between 2008 and 2011 in Pailin province in collaboration with Thailand government, WHO, USAID as well as other partners. While appreciating this support, coordination of these efforts needs to be strengthened and progressively assumed under the leadership of the government. Cambodia also has a role in supporting better regional coordination, particularly for the successful implementation of regional artemisinin resistance initiatives.

**Resource mobilisation**

Government financing for malaria is significantly constrained. The public health policy of free access by the poor to malaria interventions has huge cost implications, including both commodities and transaction costs. Scaling up malaria interventions nationwide has placed pressures on human resources, also increasing costs of implementation. Limited government resources are overstretched, with competing demands from other diseases and programs.

In terms of challenges associated with external resources, the lack of predictability is of particular concern. Pressures resulting from the global economic recession, together with a changing donor landscape and demanding grant management and reporting requirements have all influenced the quality of the malaria response.

The challenge of the artemisinin resistance has in fact resulted in increased resource mobilization, political commitment, inter-governmental collaboration, strengthened partnerships with stronger community and private sector engagement. Cambodia is ready to share these experiences with neighbouring countries in order to eliminate artemisinin resistant malaria from the region. Key lessons learnt by Cambodia malaria program over the past five years include the need to pilot innovative strategies with the subsequent scaling up of successful interventions nationwide.
Moving forward, a regional mechanism with support from the Asia Pacific Leaders Malaria Alliance (APLMA) can harness political commitment at national and regional levels. It can promote cross border collaboration to identify common threats and support an effective response. There is now the potential to engage innovative fund raising and financing strategies to support stronger control and elimination efforts across the region.

Cambodia is committed to the achievement of goals and objective of Sydney malaria conference and Asia Pacific Leaders Malaria Alliance. If these concerted efforts can prove successful in Cambodia, it will be a giant step toward the long-term goal of malaria elimination everywhere.

1. COUNTRY AND HEALTH RELATED BACKGROUND

The Kingdom of Cambodia is located in the tropical zone South East Asia. It has a total area of 181,035 sqkm. The mean annual temperature for Phnom Penh, the capital city, is 27°C. The proportion of land covered by forest areas was 57% in 2010. Cambodia’s location, topography and climate are not constraints for achieving its development goals. However, a reversal of fortunes started in the late 1970s with what was to turn into almost three decades of civil conflict. Since the Paris Peace Accords, the country has generally been politically stable and its leaders and people have become increasingly confident in future economic growth and development.

Cambodia has a population of 14.4 million (2012) consisting of 3.1 million households with 71% of them engaged in forestry or hunting activities. Gross Domestic Product was USD971 per capita in 2012 with the average household income USD252 per month. It is estimated that 22.9% of Cambodian population live below people line of Khmer Riel 3871 (US$0.97). When sick or injured, Cambodians most often seek treatment in the private sector (56.8%), followed by the public sector (28.9%) and then the non-medical sector (5.4%); a major source of health expenditure stems from household out-of-pocket payments (US$47

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per capita)\(^6\), followed by externally assisted projects (US$15 per capita)\(^7\), then government (US$11.5 USD per capita in 2013)\(^8\).

2. NATIONAL TRENDS IN MALARIA BURDEN AND ISSUE OF RESISTANCE:

MALARIA MORTALITY AND MORBIDITY

The Cambodia malaria map seems to mirror the country forest cover map (Figure 1).

Figure 1: Cambodia Malaria Map vs Forest coverage map

The number of Malaria deaths per 100,000 people decreased from 5.16 in 2000 to 1.09 in 2010, and 0.66 in 2011, which was lower than the 0.78 target set in the Cambodia Millennium Development Goals (CMDGs) for 2015. It continued to decrease significantly to 0.32 in 2012, and very close to zero (0.08) in 2013. The number of Malaria cases that treated by public services per 1000 people, decreased from 11.0 cases in 2000 to 4.2 cases in 2010, and 4.0 cases in 2011, which is the CMDG 2015, it continued to drop to 2.8 and 1.5 cases in 2012 and 2013 respectively. Despite significant reductions over the last fourteen years, morbidity and mortality due to malaria remain high compared to other countries in the region.

Analysis of data from the National Health Information System (HIS) confirmed the trend in malaria among males aged 15-49 year treated in public health facilities; this increased during the period 2004-2013. The ratio of incidence among group of male aged 15-49 years to group of female aged age 15-49 year and children below 15 years increased from 1.9 to 5.7 (see table A).

\(^7\) Figure generated from: <<Council For Development of Cambodia. Development Cooperation and Partnerships Strategy (2014-2018). Background Paper No. 4, Jan 2013>>
While the official HIS data do not record pregnancy status, a recent Cambodia malaria program review suggests that malaria in pregnancy is not a particularly significant problem in Cambodia. It found that in 2011 only 2.9% of all positive cases in females in the 15-49 year age group were pregnant and only 0.5% of all positive cases diagnosed by VMWs were pregnant on the day of testing.\(^9\)

Table A: Age group specific malaria incidence rate (Male Adult vs Women & Children)

<table>
<thead>
<tr>
<th>Year</th>
<th>Group 1: Male 15-49 Years</th>
<th>Group 2: Female 15-49 year and Children</th>
<th>Ratio Group 1/Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>3.7</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>2010</td>
<td>8.4</td>
<td>2.8</td>
<td>3.0</td>
</tr>
<tr>
<td>2011</td>
<td>9.8</td>
<td>2.6</td>
<td>3.7</td>
</tr>
<tr>
<td>2012</td>
<td>7.7</td>
<td>1.6</td>
<td>4.8</td>
</tr>
<tr>
<td>2013</td>
<td>3.6</td>
<td>0.6</td>
<td>5.7</td>
</tr>
</tbody>
</table>

**Plasmodium Resistance to Anti-Malaria**

"From Siem Reap, Melinda and I travelled to the remote province of Pailin in western Cambodia, near the border with Thailand, where researchers are running a pilot project to explore the best way to eliminate malaria. They face a number of obstacles in their work. One is a kind of arms race, as drug-resistant strains of the malaria parasite keep emerging. For reasons that are not entirely clear, some of the most effective drugs against malaria have been rendered useless in Cambodia. There’s the potential for a real nightmare scenario here. If a strain of malaria that’s resistant to artemisinin were to spread to Africa—where artemisinin is the most commonly used anti-malarial drug—it would be the worst disaster ever in malaria control. But if we can eliminate malaria in Cambodia, we can not only save the lives of Cambodians, we can also prevent any new drug-resistant strains from developing and spreading to other places."\(^{10}\) Bill Gates 2014

Despite the great successes achieved by the country in relation to malaria control, the Cambodia–Thailand border has been the global epicentre of emerging resistance to antimalarial drugs since the 1970s. Cambodia will be grateful forever to the manner in which the Gates Foundation came to its rescue by funding the

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\(^9\) CNM, WHO. Cambodia Malaria Program Review 2013
Artemisinin Resistance Containment Project in 2009. After the implementation of the containment project, the number of falciparum malaria patients has declined, but in the presence of continued artemisinin drug pressure, the proportion of patients treated with dihydroartemisinin-piperaquine who were still parasitemic on day 3 increased from 26% to 45%, between 2008 and 2010.

Recently, confirmed treatment failures (Presence of Pf until 28th or 42nd day after treatment) with dihydroartemisinin-piperaquine (DHP) has been reported between 2008 and 2013 in provinces: Battambang, Oddar Meanchey, Pailin, Pursat provinces. The high treatment failures observed with dihydroartemisinin-piperaquine could be related to the emergence of piperaquine resistance, a drug related to Chloroquine. A consensus meeting held in November 2011 recommended the use of atovaquone-proguanil delivered as directly observed therapy for Pailin province as a short-term interim solution. A marker of resistance to atovaquone was reported a year later. Hotspots of Pf resistance in Cambodia are found mainly along the border with Thailand (Figure 2).

The national malaria program in Cambodia realizes that Artemisinin resistance is a clear and present danger. We are concerned that a surge in transmission or almost untreatable falciparum malaria is a great danger not just to our citizens but also to the entire world.

Figure 2: Cambodia Hotspot resistance of P. Falciparum to anti-Malaria (CNM, Apr 2014)
G6PD-DEFICIENCY

Another constraint to malaria elimination is that the Cambodians and Khmer people as a whole has a high prevalence of the hereditary G6PD-deficiency (G6PDd). Sunnaro found that the prevalence of G6PDd in 1966 among 572 patients admitted to one hospital in Phnom Penh in was 16.2%; he also suggested that G6PDd may result in haemolytic anaemia, particularly after the administration of some drug such as Primaquine.11

In the same year, the prevalence among Khmer-Loeu, a group in a North-Eastern province of Cambodia was 31.7%12

At present, the data is patchy, but indicates a prevalence rate from 8.1% to 37.5% for males and from 3.1% to 6.9% for females.13 However, recent a two year study (2010-2012) in Cambodia indicated a prevalence rate of G6PDd among malaria patients of 13.9% including 9.1% severe G6PDd in west and 5.1% in the east of the country.14 Finally, a small study assessing the primaquine tolerability and safety in Cambodia demonstrated that G6PDd malaria patients treated with weekly dose of this drug suffered significant, mostly transient, falls in Hb with one transfusion. It suggested that primaquine as malaria radical cure must not be used indiscriminately in Cambodia but should be phased in with routine G6PD testing and follow up of G6PDd patients.15

MOBILE MIGRANT WORKERS

Most of malaria confirmed cases treated by VMWs are migrant workers; however, there is limited access to malaria diagnosis and treatment and prevention by mobile people. Sick members of the migrant/mobile population tend to return home to non-endemic areas where there is no treatment and may die.16

As shown in figure 3, Cambodian residents come from southern lowland provinces with high population density and travel to border areas in search of agricultural work and possible cross border to neighbouring countries; detail in the maps below indicates origin of migrant workers in blue, destination in orange and red17

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15 Sim Kheng et al. Assessing the tolerability and safety of weekly-administered primaquine in Plasmodium vivax infected Cambodians with and without glucose 6 phosphate dehydrogenase deficiency. draft manuscript 22 Apr 2014
16 Kevin Palmer et al. (in collaboration with the GFATM & WHO). Cambodia Malaria Program Review. Final Report. 24 July 2012.
17 URC-Malaria Control in Cambodia. Brief summary on mobile and migrant population. Unpublished. Results from a consultative and participatory workshop conducted in July-2008 with Commune and Health Centre Chiefs from Battambang and Sampouv Loun ODs.
3. CURRENT MALARIA PROGRAM ACTIVITIES, EXPENDITURE AND FINANCING SOURCES:

NATIONAL GOVERNMENT

The control of malaria and other vector borne diseases remains a very high priority not only for the Ministry of Health (MoH), but also for the entire government. The past few years have witnessed an increasing level of political goodwill and commitment at the highest level of Government for malaria elimination. For instance, Cambodia's National Strategic Plan for Elimination of Malaria 2011-2025 was developed, and implemented as a ‘prime minister owned’ initiative. In the Ministry of Health (MoH), the National Centre for Parasitology, Entomology and Malaria Control (CNM), a specialized institution was founded to develop and execute three nation-wide national programs: Malaria, Dengue/CHICK and Helminthic diseases.

In recent years, these three programs have evolved from essentially vertical programs to more administratively decentralized and integrated programs. Responsibility for the detailed planning of many activities has devolved to Provincial Health Departments and the actual implementation of activities relating to public sector malaria diagnosis and treatment are now more fully integrated into the general health services at the health post, health centre and referral hospital level (See Figure 4).
In this context, it is important to note that health care management in the government sector has been reorganized since 1996 on a population basis. The basic unit of health care of this reorganized structure called the "Health Coverage Plan" is the Operational District (OD) covering a population of 100-200,000 persons. The OD provides a comprehensive primary health care (PHC) package based on the original comprehensive meaning of PHC under Operational District Office (ODO) management.

This should not be confused with hierarchical administrative district (AD) of the country which are not population or community based (Total of 185 ADs in 2013, including 14 Khans, district equivalent in urban areas). The ODO (Total of 81 in 2013) supervise one or two referral hospitals and 10-15 health centres (total of 1088 nation-wide in 2013), each serving a population of 8-10,000 people. The health centre (HC) is staffed with 6-12 persons and provides a basic integrated package of health care referred to as the Minimum Package of Activities (MPA). These services are basic preventive, promotive and curative care. In addition to its facilities based services, the HC provides outreach services to local communities in collaboration with village community workers. Each health centre has a joint community co-management committee where
local community representatives (including one member from the elected Commune Council and two representatives from each village) have responsibility for overall management of the health centre. Some remote villages with difficult access to health centre could have one Health Post (total of 84 in 2013). The Health Centre refers severe or complicated cases to a referral hospital. Both the referral hospital and the Health Centres thus meet a community’s basic health needs and are managed as a single system of health care.

At its most basic, such a system can provide pregnant women with antenatal care; provide good delivery care; manage any complications as they arise; if a complicated delivery, correctly manage and refer that woman to the referral hospital for safe delivery and if medically indicated a safe caesarean section. Thereafter, returning a healthy mother and child to her home village and provide follow up care and contraceptive advice. The concept is thus holistic and meets an individual’s basic needs from the home to the hospital.18

CNM coordinates malaria control activities in the entire country with special focus on endemic provinces through the Provincial Health Departments (PHD), OD, HC/HP and down to the Malaria Village Worker (VMW). These VMWs are not civil servants and work on volunteer basis.

In terms of Malaria control, decentralized responsibilities of the Provincial Health Department (PHD) are as follows:

Assessment of malaria epidemiology and response in the province; integration of an action plan for malaria into the overall Annual Operational Plan; organizing training courses for different personnel; distribution & retreatment/replacement of IBNs/LLIMNs; assistance with social marketing of insecticide-treated hammock-nets, Malacheck and Malarine products; distribution of dipsticks, microscopes, reagents, anti-malarials, etc; IEC Material distribution & IEC campaigns; collection of Health Information on Malaria; participation in Operational Research Studies of CNM; supervision of ODs/Referral hospitals/Health Centres; participation in Border Malaria Meetings and Follow-up actions.

Each PHD has a Provincial Malaria Supervisor (PMS) who may have additional responsibilities such as dengue and other communicable diseases in addition to malaria. Depending on population and land area size, each province has one to ten Operational Health Districts. Although there are some “District Malaria Supervisors” in endemic districts, most of district “malaria staff” are in fact multi-functional. There are 45 ODs with endemic villages; each OD cover 6-10 population catchment area, each covering around 8-10 thousand

inhabitant living in around 8-12 villages. Each Health Centre has 6-10 staff but there are no specialized malaria staff at this level. Each village at risk of malaria has 1-2 Village Malaria Volunteer Workers (VMWs) who work under the supervision of the Health Centre. The VMWs have the ability to disseminate basic health education messages, organize mosquito net campaigns, and test/treat malaria.

Logistic management functions for the malaria program are integrated into the overall MOH system supply chain for all commodities. These flow from the Ministry of Health ’s Central Medical Store (CMS) to the Operational District Health Office (OD), then to health centres or referral hospitals and finally to VMWs.

Two key areas of the Health Information System are also closely integrated into to the national health system. Firstly, the National Health Information System (NHIS), which is maintained by the Department of Planning and Health Information (DPHI), covers basic data including malaria from public health facilities. Shortly, private medical sector and VMW data will be included as a separate page. Secondly, the logistics management data-base, which is maintained by the Department of Drug and Food (DDF) and the Central Medical Store (CMS); this contains data on stocks of medical supplies including supplies in malaria program.

In addition to the information system integrated with the overall national system, CNM maintains specific Malaria Management Information System (MIS) data, containing both epidemiological and operational data, including case reports from VMWs.

In response to the alarming situation of resistance, CNM will soon submit its revised version of the National Treatment Guidelines for Malaria (NTGM) for approval by the Ministry of Health (MOH). This new version incorporates updated information agreed at National Malaria Drug Policy meetings held in December 2013 and January 2014. These meetings gathered experts and key stakeholders from the Ministry of Health, WHO, academia and international partners to consider the latest malaria surveillance and research findings and refine and improve existing treatment guidelines. These guidelines are designed for doctors and staff of each level of the public health facilities (referral hospital, health centre and health post), the military, police, and private sector, as well as community level workers to provide uniform and optimal case management of malaria.

The goals espoused in these guidelines are three fold: First, to aggressively reduce malaria morbidity and mortality Cambodia approaches malaria pre-elimination. Second, to reduce the impact of resistant malaria strains and preserve our current arsenal of malaria treatments by optimizing drug regimens and extending case management to follow patients in high risk areas. Third, to establish more aggressive diagnostic testing to accurately diagnose and treat a larger proportion of malaria cases including asymptomatic cases. Achieving these aims is critical as we execute Cambodia’s National Strategic Plan for elimination of Malaria 2011-2025.
NATIONAL FINANCING

Government expenditure on health has increased fourfold over the last 10 years. As shown on Figure 5, Government expenditure on health as percent to total government expenditure also increased from around 8% in 2000 to 12% in 2010 then remained stable at this rate until 2014. This level of government contribution to health sector is among the highest in the World. It should be noted that at least around two thirds of population below the poverty line are covered by a health equity fund which pays for services delivered to them by public health providers. Where an equity fund is not available, the poor may benefit from various payment exemption schemes.

Government’s contribution to malaria program was around US$1.5 million each year during the past five year, which were accounted for 5-9% of total budget for malaria program. Budget execution is efficient with CNM experiencing no delays in expenditure and procurement, approximately 95% of approved budget has been implemented in recent years.

Figure 5: Government Expenditure on Health including malaria program

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19 Figure generated from http://cambodianbudget.org/budget_database.php
20 Figure generated from WHO’s World Health Report 2013
22 Figure generated from record on CNM budget expenditure and monetary value of drug/supplies procured under national budget
MULTI-SECTORIAL INTERVENTION

CNM takes a strategic role, setting policy, strategy with oversight of monitoring & evaluation, research and training. It is not an implementing agency; the malaria program is implemented by a mix of stakeholders in both public sector, private sector and community.

Within the government sector, aspects of the program are implemented by a range of actors across different ministries, for example the Ministry of National Defence (MoND), Ministry of Interior (MoI), Ministry of Education, Youth and Sports (MoEYS) and Ministry of Women Affairs (MoWA), Central Medical Store and the Department of Drug and Food and Cosmetics. Malaria treatment and prevention activities in these sector follow technical protocol recommended by CNM.

At sub-national level, the program involves both provincial and district authorities, commune councils and village chiefs. Each Province established a Provincial Task Force for Malaria chaired by a Deputy-Province Governor.

Malaria endemic villages have one or two Village Malaria Volunteer Workers who are supplied with rapid diagnostic test (RDT) kits, anti-malaria and education tools after training. A study conducted in North-Eastern Cambodia suggested that the presence of VMW with the capacity to treat ARI and diarrhoea, in addition to malaria, has encouraged mothers to seek care from the VMW first rather than the private drug vendors. Not only are VMW well-known and respected in their communities, but mothers also report satisfaction with their services and willingness to use them again in the future; high VMW utilisation levels were also reported in the pre- and post- KAP surveys conducted by PSF.

Recently, the government has sought closer collaboration with the private sector. An MOH guideline letter has requested that all relevant Ministries to collaborate more closely on village level provision. The results have been tangible, penetrating even to some informal sector enterprises such as transportation, with taxi drivers providing Behaviour Change Communications messaging on malaria. The mass media has also been engaged, both to communicate program successes, and to raise awareness and change behaviour. Lastly, the program has mobilised the staff of other private sector enterprises, harnessing their reach into Malaria endemic areas.

EXTERNALLY ASSISTED PROJECTS

Cambodia also hosts a range of externally funded projects. The most innovative project, the "Artemisinin Resistance Containment and Elimination (ARCE)" was implemented along the Thai-Cambodia border between 2008 and 2011 with funding support from the Bill & Melinda Gates Foundation.

Figure 6 shows the number of malaria cases clearly declined after only a year of implementation of ARCE. Analysis of data from Cambodia national malaria survey show a three-fold decrease in malaria prevalence every 3 years in the Western region of Cambodia compared to a less than two-fold decrease in the Eastern region and these trends were statistically significant. WHO suggests that the impact of ARCE has continued through 2013; Moreover, ARCE was able to help with ‘rescue’ supplies in case of stock out of commodities to be procured by other projects. For instance, in response to delay in ACT procurement by GFATM grant through UNICEF in 2011 (Issue of product being out of line with WHO recommendations), ARCE offered rescue ACT supply to compensate stock out due to delay procurement by GFATM malaria grant.

Figure 6: Major partners in term of funding vs. malaria incidence rate

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25 Arantxa Roca-Feltner & Sarala Nicholas. Trend in Malaria Prevalence Survey and Net Coverage: Cambodia 2004-2010 (with a very And very preliminary results of CMS2013); Mar 2014

26 Steve Bjorges (WHO Expert). Email communication email dated 2 Aug 2013.
As shown on Figure 6, the most significant externally assisted project by financing volume in 2009 was the BMGF funded Artemisinin Resistance Containment and Elimination (ARCE) Project executed by WHO and more recently, the 2011-2013 GFATM malaria grant. A PMI/USAID funded project also commenced in 2011 and fully became operational in 2012.

Many research projects are also implemented under CNM direct management in collaboration AFRIMS, BMGF, CHAI, ITM, MC, MSF, NIH, MORU, NAMRU2, UBS, US-CDC and WHO. Theses projects have been vital for CNM policy decision especially in adaptation of national treatment guideline for the three programs.

Interventions proven effective by ARCE have been handed over to the malaria grant project SSF (Round 9) funded by GFATM, including keys technical protocols with larger scope in term of both geographical coverage and budget. However, whilst intervention strategies were replicated, project management structures were not; consequently, the expected results did not materialise. Of US$9.05 million budget approved for 2010, the 1st year of the SSF grant, only US$0.94 was spent, and in 2011, there was massive stock out of RDT/ACT in private sector for seven to nine months, despite their being at least US$12 million cash assets at the CNM account.

For the period 2015-2018, it is not certain there will be sufficient funds to cover the pre-elimination phase which requires resources not only to maintain the on-going control activities, but also additional effort for elimination in selected districts (See Figure 9).

Considering the vast experience gained during ARCE project, and its location in the GMS, Cambodia will be central to successful implementation of artemisinin resistance and elimination initiatives in the region. It is particularly important for all donors and national stakeholders to work on these issues in partnership. The Cambodia Malaria Program provides a strong opportunity for investment in impact, elimination and managing the global risk of drug resistance.

PRIVATE SECTOR

CNM has initiated several public-private partnerships not only by involving the private medical sector (private clinics, private pharmacies), but also the private non-medical sector such as mosquito net sellers and farm owners. These initiatives were implemented within a ‘four pillar’ framework with the objective of increase coverage of impregnated mosquito nets, diagnostic and treatment of malaria.

The first pillar is drug regulation. After the MoH issued a ban on artemisinin mono-therapy, Ministry drug inspection police regularly visit private pharmacies. Samples of malaria drugs in both the public and private sector are routinely tested by DDF. Currently CNM is the only agency to be issued with a licence
for anti-malarials and reagents, although the law on pharmaceutical management has provision for licencing private sector firms.

The second pillar is social marketing of RDT/ACT and insecticides, implemented by PSI. Cambodia has been running this program for the last 10 years. There are three main goals: accessible quality drugs and tests, responsible providers, and informed patients. Training is key; private providers are allowed to test – and treat uncomplicated malaria. They should refer children under five, pregnant women and severe cases to the nearest public health facility. Cases within artemisinin resistance ‘Zone 1’ are an exception where they can test – but should refer all positive cases to ensure efficacy of 1st line drugs is maintained. It should be noted that social marketing is a package of interventions – not just a product. PSI trains private providers to TEST – TREAT correctly – and REFER. The amount of commodities supplied to support this effort during 2008-2013 are shown on figure 7

Figure 7: Social Marketing of malaria products
The third pillar: Private enterprises (Farming, Mining, Hydro-electric power, Road/bridge construction, Tele-communication, taxi transport) with special focus on Mobile Migrant Workers, on-site malaria health care, mosquito net lending scheme for migrant or mobile workers in private farms, behaviour change communication through taxi drivers.

The 4th Pillar: Public Private Mix (PPM) interventions: Data collection from private outlets, referrals to the public sector; licensed private sector signed Memorandum of Understanding (MoU) on diagnostic and treatment services. In 2013, 1009 private health providers signed MoUs with district health offices. The total number of reported confirmed malaria case following the agreement is 2367, with 10% of them referred to public health facilities; 85% are male, and 24% were infected with pf or Pf co-infected with Vv.

The positive impact of these pillars of intervention were in part demonstrated by national surveys conducted by PSI to assess the market share of different anti-malaria drugs (public and private outlets). This shows the drop in monotherapy from around 6% to less than 1%. There was a severe stock out in 2011 – which may explain why AS/MQ dropped – and providers turned to CQ instead (Figure 8).

Figure 8: Market share of anti-malaria 2009-2011 (Source: PSI)

In spite of these remarkable achievements, malaria interventions in private sector need further support and innovation. Within Cambodia, PSI recently conducted a National Mapping Survey as part of its plantation
program requested by CNM. This sought information on key characteristics of the plantations such as type (Family-run vs enterprises), product (hydro-electric, roads, mines), location, size in term of number workers by site/season, availability of malaria health care services, and living conditions. The survey suggested a significant gap in coverage and access to malaria services; this needs to be closed as soon as possible. Over 70% of all workers come with their families while very few enterprises (20%) had health services for their workers on site. Of those with on-site health facilities, only 22% and 34% respectively had malaria testing and treatment services available. With funding support from the Bill & Melinda Gates Foundation, PSI is developing an operations-research project to assess feasible models to eliminate malaria in workers employed on private plantations (Cambodia-Myanmar 2013-2015), this will test different active ‘screen and treat’ models in selected plantations.  

4. CHALLENGES ASSOCIATED WITH MOBILIZING ADDITIONAL NATIONAL GOVERNMENT SUPPORT

According to the National Strategic Plan for Elimination (NSPEM), it is intended that malaria diagnosis and treatment in public facilities is free of charge, and distribution of mosquito nets is free for soldiers and polices. The plan does not however guarantee free-of-charge distribution of mosquito nets for the rest of population. This presents a significant barrier to access for broader population, in the long term and particularly after the next 2015 national campaign for distribution; there room for discussion on possible full or partial payment by consumers for mosquito nets offered by public health workers or VMWs. In private sector, possible expansion of project revenue generated by PSI social marketing of ACT/RDT needs to be explored.

Constraints on remuneration levels have a significant impact on programme delivery. The salary of junior CNM staff amounts to approximately US$158 per month after a recent increase by 20%. Government Daily subsistence allowance (DSA) from government budget and externally assisted projects is around US$20 per day including accommodation and food. The rate has been implemented since 2008 without any change in accordance to the price index published by the Ministry of Planning. Most donors use the rate set by the government even though much higher rate (US$35-US$45) is being applied neighbouring countries for projects assisted by same donors. It is expected that the DSA from government budget is going to be revised soon. However there are questions over the ability of Government to identify additional resources for this and other priorities.

27 PSI Cambodia. The PPM Program & Private Plantations Preliminary data. Slide Presentation at the National Malaria Drug Policy Meeting. Phnom Penh; Cambodia; 30-31 January 2014
There are a range of pressures preventing additional resources being deployed toward the sector from public financing. Firstly, from the year 2000, government has already committed to significantly increase expenditure both in absolute terms, and as a percentage of its total expenditure. This reached a ceiling of 12% during the past five years and is significantly above the average for Low Income or Lower Middle Income Countries which was 9.3% and 7.4% respectively in 2010. ²⁹ When asked about additional financing for specific communicable diseases, for example to financing a dengue response, the Ministry of Economy and Finance (MoEF) has asserted that its mandate is to allocate budget for the sector as a whole, which has been regularly increased, whilst allocation for specific sub-sectors is within the authority of the Ministry of Health ³⁰.

Secondly, the MOEF are also aware of the high burden of non-communicable diseases (NCDC) raised by the MOH. It has expressed concerns that only 2% of the total program based budget from all source is allocated by toward the NCDC program. This has challenged the credibility of claims for additional budget for CDC program since almost half the program based budget is already allocated for this program (Table B). ³¹

Lastly, a key factor of success of malaria program has been its integration into the national health system which naturally absorbs a significant amount of budget for infrastructure development, human resource management, and to maintain and regulate supplies. Any cut of budget in favour of specific disease control programs may in fact negatively impact on the malaria program.

²⁹ World Health Organization. World Health report 2013
³⁰ Personal communication at a meeting on piloting program based budget in health sector, 2014
³¹ Personal communication MOH & MOEF budget negotiation team, 2013.
This is not to say however, that CNM will not make efforts to secure additional resources from the government. A positive sign is that the Ministry of Health has been identified as one of the ten pilot ministries to implement government financial reform for the 2015 fiscal year. This involves a shift from economic classification of budget lines to a program and activity level classification, from pre-audit to post audit, and from assessment of budget performance based on input to outcome and results. This reform paves the way for CNM to mobilize additional resource from the government. As a first step, CNM has recently summited its budget strategy for its three national programs (Malaria, Dengue and NTD) with explicit M&E indicators. This indicates a budget trend forecast for 2015-2018 using the 2014 approved (See Table C) as baseline. The fact that the proposed budget for 2015 is significantly higher than the baseline is likely to attract the attention of MOEF.
Table C: CNM Budget proposed to MOH/MOEF for 2005-2008 is part of pilot Government Financial Management Reform

<table>
<thead>
<tr>
<th>Program</th>
<th>Approved US$ million</th>
<th>Submitted to Ministry of Economy and Finance through MOH (USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
<td>2015</td>
</tr>
<tr>
<td>Dengue</td>
<td>0.34</td>
<td>0.34</td>
</tr>
<tr>
<td>NTDs</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Non Program</td>
<td>0.66</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>0.7</td>
<td>5.4</td>
</tr>
</tbody>
</table>

5. CHALLENGES ASSOCIATED WITH DONORS - REPORTING, PLANNING, TRANSACTION COSTS, PREDICTABILITY

Despite the ongoing efforts to attract additional government financing, the Cambodia malaria program relies heavily on external assistance. Of the total US$80 million expenditure during the period 2009-2013, US$57.9 million (79%) was funded by the GFATM alone, compared to a government contribution of US$4.7 million (6%).

Despite the significant benefits stemming from these levels of external financing, a number of challenges remain. Predictability and sustainability are both major concerns. Additionally, the changing donor landscape and continuous changes in donor procedures often render grant application, negotiation, implementation and reporting very difficult.

External resources lack predictability both in terms of allocation (Figure 8). The Budget committed for the next 4-year period 2014-2017 is US$48 million, which is 64% below amount committed for previous 4 years (US$134 million). It should be noted that even the previous allocation was sufficient to maintain malaria control but not for elimination. Given expectations for the period 2015-2020 to move from control to elimination, the Cambodia national program programme will need to identify additional resources to support elimination activities in addition to maintaining selected control activities.
Disbursement of committed funds is also a challenge. Of the US$117 million committed for the period 2009-2013, only US$68 million (or 58%) was actually spent. Disbursement delays are not uniform across all donors; for the BMGF funded project implemented through WHO/CNM, and PMI/USAID funded project through URC, around 94% of approved budget was spent. In addition, 97% of government budget approved for malaria was executed during 2009-2013. However, in the case of GFATM as the largest contributor to the malaria program, only 52% of budget amount was executed in the same period. Moreover, the spending rate dramatically dropped to 46% in 2012-2013, the period of round 9 transition from phase 1 to phase 2, which was coincide with the change of PR responsibilities from CNM to UNOPS. At the same time, the investigation of CNM by OIG recommend more control on expenditure for malaria in Cambodia. Procurement delays have led to slow pace of implementation of activities at the field level and low levels of expenditure patterns at all levels of implementation.
Honorius grant management requirements contribute to these delays; a case in point is the GFATM grant. CNM was assigned to take lead among other PR in development of a procurement manual, which was expected to be implemented by all PRs in Cambodia. CNM started to recruit a short-term consultant by open advertisement in January 2011. Due to a limited field of candidates and budget, long approval times from GFATM, not until 14th Feb 2012 were CNM able to sign a contract with a short term consult to review and revised PR's procurement guidelines and submitted to GFATM in June 2012.

On 23 Oct 2012 GFATM sent an email indicating that in the current context and in light of the existing restrictions on procurement by PRs and SRs (“essential” activities) for the next six months, they suggested postponing any further discussions on this manual until a later stage. Overall CNM spent at least 18 months working to get a final draft of a product that would never be implemented.

Constraints in financial management and procurement for externally assisted projects have led to a slow pace of implementation of activities at the field level and low levels of expenditure. A broad list of constraints in externally assisted projects during 2010-20013 is provided on Appendix 1, and suggestion for improvement in selected activities are also reflected in Appendix 2

6. WHAT IS WORKING AND WHAT IS THE GAP

The malaria program in Cambodia reaches beyond the milestones set for MDGs in terms of malaria morbidity and mortality. Piloting of malaria pre-elimination/elimination approach is very encouraging and CNM/MoH strongly supports the initiative while political commitment is highly confirmed by the prime minister of the Kingdom of Cambodia. Currently, a gap in information is what additional effort is required in the moving from current Control interventions to the Pre-elimination/elimination interventions?

"There are many unknowns on how to eliminate malaria, and many questions need to be addressed about asymptomatic carriers”

A broad list of program intervention that are working, and key gaps is provided on Table D.

32 John Reeder (WHO, Global Malaria Program): Communication letter to CNN Director, 1 Apr 2014
Table D: "What is working & What is the Gap"

<table>
<thead>
<tr>
<th>Programme intervention</th>
<th>What is working</th>
<th>Key gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>LLIN coverage increasing</td>
<td>· Too much reliance on mass campaigns and not enough on continuous distribution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Transition in commercial sector from untreated nets to LLINs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Implementation of key interventions (and evidence of their effectiveness) to protect people when outdoors (either before and after bed or due to working outside at night-time)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Entomological data to understand impact of prevention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Data for deciding when to stop vector control in areas of no transmission</td>
</tr>
<tr>
<td>Diagnosis and treatment</td>
<td>· VMWs find and treat many cases</td>
<td>· Diagnosis in private sector</td>
</tr>
<tr>
<td></td>
<td>· Use of artemisinin monotherapy is quite low</td>
<td>· Regular data on drug quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Major concern of running out of effective treatment drugs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Need a policy for primaquine use for <em>P. falciparum</em> and <em>P. vivax</em></td>
</tr>
<tr>
<td>Surveillance</td>
<td>· Good progress in setting up village malaria database and reporting</td>
<td>· Response plan on finding excess cases needs evaluation and full implementation</td>
</tr>
<tr>
<td></td>
<td>· Malaria bulletin is very useful</td>
<td>· Data from private sector needs to be included</td>
</tr>
<tr>
<td></td>
<td>· Incorporating data from both health facilities and VMWs</td>
<td></td>
</tr>
<tr>
<td>BCC</td>
<td>· Good collaboration with Thailand</td>
<td>· Need more collaboration with other neighbours</td>
</tr>
<tr>
<td>Management and capacity development</td>
<td>· High capacity team in CNM</td>
<td>· Risk of not maintaining a highly skilled team as needed for resistance response and elimination – need to make best use of highly trained staff</td>
</tr>
<tr>
<td></td>
<td>· Significant efforts to ensure quality and coverage</td>
<td>· Capacity for decision making and response to outbreaks at peripheral level</td>
</tr>
<tr>
<td>Resistance response</td>
<td>· Excellent progress in reducing Pf in areas of resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>· Intensive resistance surveillance</td>
<td></td>
</tr>
<tr>
<td>Malaria elimination</td>
<td>· Steady decline &amp; Good surveillance</td>
<td>· Needs to be intensified</td>
</tr>
<tr>
<td></td>
<td>· Availability initiative in the development of pilot model for transition arrangement from control to elimination i.e. beginning of pre-elimination in 2014 for 6 OD supported by GFATM (3 OD), PMI/URC (2 OD) and BMGF/AFRIMS (1 OD)</td>
<td>· What to do about asymptomatic cases?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Need more cross-border activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Find and treat asymptomatic carriers of plasmodium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Detection and treatment of cases in remote hard-to-reach populations, including ethnic minorities, migrant labour and defence and security personnel</td>
</tr>
</tbody>
</table>
LESSON LEARNED

"Cambodia’s effort to eliminate eventually point the way toward a goal that’s shared by many of us in the global health [...] A lot more work needs to be done in the years to come. But I left Cambodia thinking that if we can be successful there, it will be a giant step toward the long-term goal of wiping out malaria everywhere." 33 Bill Gates 2014

Overall, key factors of successes in Cambodia malaria program during the last five years were as follows:

- High-level political will and support;
- Universal bed net coverage (1 net per person in all malaria risk areas);
- Community-based Early Diagnosis and Treatment (Village Malaria Workers with RDT and ACT);
- Health Facilities well stocked with diagnostics and drugs.34

Lessons learned from these successes are well documented in the recent Cambodia Malaria Program Review35

WHAY FORWARD

As way forward, the following are suggestions on measures that both NMCP and donor agencies can take:

1. To improve quality and coverage in malaria control and move toward elimination:
   a. Active Surveillance – investments in surveillance for active case finding and detection (including asymptomatic carriers of plasmodium) to support elimination and extend its reach to the community and private sector;
   b. Targeting of mobile populations – reallocation of funding for the careful targeting of mobile and other at risk populations to support elimination;
   c. Continued private/public sector mix – to extend the reach, maintain low-cost, ensure effective treatment and enforce the shift from monotherapies;
   d. Drug regime flexibility – to focus on the treatment of the more difficult cases as treatment numbers decline;
   e. Drug resistance – investments in resistance surveillance, containment, and accelerating the ban on monotherapies. This helps manage a global risk. Explore possibility of working with MoD to


34 Steve Bjorges. Email communication on 2 Aug 2013 regarding preparation of Cambodia Presentation for the Bi-Regional Meeting on Healthy Borders in the Greater Mekong Sub Region 5-7 August 2013, Bangkok

35 Kevin Palmer et al. (in collaboration with the GFATM & WHO). Cambodia Malaria Program Review. Final Report. 24 July 2012.
screen soldiers before there are deployed to Africa.

2. To consolidate grant support to the malaria program which currently has too many lines of support and negotiation.
   a. Voluntary Pooled Procurement – there have been serious delays, and the delivery should be accelerated. In addition, local preferences should be given more weight in the choice of ITNs. Bidding procedures need to be simplified and not repeated for every order;
   b. AMFm – was good idea but its time has passed in Cambodia, as the national program has implemented many of the AMFm goals already. The supporting activities are necessary and should be streamlined to the national program and the work of PSI directly;
   c. Grant Consolidation – Generally, there are too many lines of support and review, which needs to be consolidated behind the national malaria program.

3. Take the opportunity to streamline procedures:
   a. Streamline Grant Reviews – the country and GFATM need to work in partnership to reduce the lengthy process of country, LFA, and Secretariat review of grants and of individual grant components, particularly training, recruitment and procurement plans;
   b. Use National Program Reviews – Performance reviews should build on the information collected in national reports and program reviews to make them more strategic;
   c. Manage General Risk Aversion – The Office of Inspector General’s review has led to severe risk aversion in all country, LFA and GFATM decisions. An assessment and communication of the scale of the risk and how these risks can be mitigated decisively is required.

4. Identify mechanisms to provide longer term support and predictability for elimination:
   a. Define support to 2015 and 2020 – activities for elimination will require support to 2015 and 2020, and where possible funding from the multiple sources should be made more predictable;
   b. Reduce dependency on GFATM financing – other sources of funding need to be targeted, both domestic and international. This will reduce the dependency on GFATM financing and the impact of the some of the delays observed.

7. WHAT ACTIVITIES SHOULD BE ADDRESSED REGIONALLY
As development finance becomes more complex, regional interventions could take a number of forms in terms of partnering arrangements and financing modalities. One such modality that is promoted by Cambodian Government as potentially of great benefit is South-South Cooperation on development (SSCD) & Triangular Cooperation. The SSCD aims to observe the principle of non-interference in internal affairs, equality among developing partners and respect for their independence, national sovereignty, cultural
diversity and identity and local content. Cambodia is located in a 'good neighbourhood', surrounded by fast-growing economies and middle-income countries, which have been able to provide support related to key sectors and reforms.36

ADB has its advantage implementing malaria program intervention in two WHO regions (SEARO & WPRO). There is the potential for traditional North-South arrangements to be complemented with the SSCD & Triangular cooperation. In this context, regional intervention in malaria elimination should focus on the following:

- Share information on surveillance with neighbours – this does not mean a single surveillance system for the whole GMS, as the surveillance systems need to fit national needs, but requires consensus on what information should be taken from national systems and shared in a regional database. This should start first from the already existing MBDS

- Tracking migrant workers mobility and expand the coverage and access to malaria prevention & treatment, especially vulnerable groups such illegal migrant workers. A number of interventions can support this, including mHealth, Bilingual IEC in border areas, compulsory screening of malaria at border check points, MBDG;

- Joint ACT Watch with consensus in appropriate recommendation for action;

- Identify better ways to incentivise the private sector and keep prices of commodities down and to promote vector control services and diagnosis before treatment;

- Resource mobilisation for the regions based on a credible financial gap analysis and exploring how to raise resources;

- Advocacy for harmonization of various regional initiative in fight against malaria in collaboration with SEARO & WPRO;

- Consideration of a reserve fund to ensure no interruption of malaria control measures;

8. WHAT ISSUES SHOULD A REGIONAL FINANCING TASK FORCE EXAMINE TO ASSIST CAMBODIA NATIONAL PROGRAM

Suggestions on possible recommendations to APLMA Regional Financing for Malaria Task Force to support Cambodia’s pre-elimination program delivery:

• Pilot a model for funding local elimination initiatives, in line with Government policies on decentralization/deconcentration, including contracting-out approaches;

• Funding support to re-estimation of Financial Needs and Identification of Financial Gaps, and in resources for the pre-elimination phase (2015-2020) of the National Strategic Plan for Elimination of Cambodia 2015-2025;

• Assist in the mobilization of resources for pre-elimination phase 2015-2020 of the National Strategic Plan for Elimination of Cambodia 2015-2020;

• Support project designs that focus on results rather than on process; this will improve compatibility with the on-going financial reforms around the 2015 Government program budget. This reform requires the shift from economic classification of budget lines to result based classification and control/audit will be shifted from process to measurable outputs;

• Ensure close involvement in the already established joint partnership working group led by CNM, involving members from all development partners including government and non-government sector (TOR in Appendix 3);

• Independently assess all key interventions to ensure effective prioritisation and maximize cost effectiveness.
9. APPENDIX

APPENDIX 1: CHALLENGES IN IMPLEMENTING EXTERNALLY ASSISTED PROJECT: FUND HOLDER A (FH-A) CASE

THE "FUND HOLDER A” (FH-A) is fictitious

A-CHALLENGES FACED IN IMPLEMENTING FH_A GRANTS

- Changing procedures, processes, formats e.g. Training Plan formats, Reprogramming formats, implementation update and disbursement request formats, statement of expenditure (SoE), Work plan for Carry Forward Activities
- Changes in interpretation because of turnover of FH-A Secretariat, eg. internal candidates’ right to apply for contract positions
- Complexity of steps leading to signing of Grants. For e.g. consolidation of existing successive grants into a single grant, fulfilment of conditions preceding grant signing
- Reviews by FH-A’s local agencies often based on financial numbers and not on technical aspects. For e.g. not applying the concept of ‘reverse indicators’ to the treatment indicators. (In consideration of the decrease in malaria incidence at impact level, CNM request FH-A’s local agency shift two output level – numbers of malaria treated at public health facilities and VMWs – because there are less malaria cases than targeted).
- Increasing number of implementation partners with no previous FH-A grant experience
- Disbursement delays caused by delay in review of the implementation update by the FH-A local agency who themselves receive progress update simultaneously from the 4 Project Implementing Units (PIU), including CNM
- Difficult Conditions Precedent, which involves multiple stakeholders and are sometimes outside the direct control of the CNM. For e.g. CNM lead the process for Development key operational guidelines to be used for all PIU: Procurement Guidelines, Human Resource Manual, Storage Conditions, etc.
- Lack of local representatives of FH-A, consequently, clarifications from FH-A headquarter often take time. FH-A staff themselves are very often not compliant with the Communications Protocol published on the FH-A website. Key communications and document submissions from the implementing agency are often not acknowledged; repeated reminders are sometimes required. PIU are consequently not able to take action on a number of issues as it awaits the decision from the FH-A.
- Limited time deadlines for report submission leave very little time for PIUs to verify data/reports and supporting documents submitted by Sub-Implementing Units (SIU) or Sub-sub-Implementing Units
(SSIU) such as Provincial Health Departments (PHDs), NGOs, other government institutions such as military/police units)

- **Challenges in preparation of Annual Operational Plans and M&E**: Although the Department of Planning and Health Information (DPHI) leads the process for the whole health sector, CNM inputs into this process comprise of defining strategic priorities and supporting Annual Operational Planning for each level of service. Grants create parallel systems and severely constrain the systems development as the grant cycles do not necessarily follow the AOP cycle and very often CNM and partners prepare plans on behalf of PHDs/ODs without the latter’s active participation.

**B-FINANCE**

- Inconsistent and conflicting advice results in delays and SIU/SSIU are reformulated. When the advice constantly changes; it is frustrating for all staff, taking up significant amounts of the time of program teams and reducing capacity for implementation support. There are also impacts on finance staff who express frustration at the multiple revisions required.

- The time lag in the FH-A responding to queries means that PIU-CNM is often unsure about those items on which it has authority to spend. This inhibits the ability of implementers to meet deadlines and programmatic targets as a great deal of time is spent waiting for guidance from the FH-A prior to being able to proceed in a coherent manner without fear of being penalized in the future.

- Micromanagement and lack of flexibility means managers do not really manage their budgets – logical programmatic decisions cannot be made because of the inflexibility, and lack of ownership of budgets means that appropriate tracking of budget vs forecast often does not happen.

- The complex role of the FH-A's local agency (LA) can often be a challenge. The LA is adamant that their role is not to provide technical advice. Unfortunately, the result is that when mistakes are made, or reports are submitted that do not conform to expectations, the LA inform the national program whilst firmly refusing to provide guidance as to what is required. An example of this relates to the SoE format, which it was agreed in a formally endorsed minute from a meeting between all parties in late 2011, that they would provide an appropriate structure for, but which has not been forthcoming, the LA insisting that it is not their role.

- The LA appears to suspect fraud and mismanagement without any evidence—it seems they take a forensic auditor's view, which appears to be well outside the purview of an LA.

- Overall, from a finance perspective, the micromanagement of small amounts of funds, changing guidelines and conflicting advice, and the incredibly onerous reporting requirements make the malaria grants in Cambodia very difficult to implement in a sensible and programmatically cogent manner.
C-PROCUREMENT:

- Need for FH-A’s prior approval on Technical Specifications for both Health and Non Health Products. (LLINs, LLIHNs, RDTs, ACTs, Microscopes, IT Equipment, Motorcycles, etc.). Communications in relation to the approval process tended to be highly time-consuming. For e.g. procurement of mosquito nets through the Independent Procurement Agency (IPA) process was so long delayed that procurements for two years and two different grants had to be pooled together. Procurement of RDTs was again delayed due to the cumbersome procurement requirements leading to stock outs for months together in both the public and private sectors; these could only be partially addressed through emergency procurements. There were frequent the stock out of ACT/RDT especially commodities for social marketing activities (9 months between 2008 & 2011 and 6 months in 2012), mainly because the IPA-procured product has not met the technical specifications prescribed. IT equipment, which should have contributed to staff efficiency, arrived only 18 months after the beginning of the procurement processes. The new ACTs stipulated under the 2011 National Treatment Guidelines arrived only in July 2012 for the private sector and only was available in Q1 2013 for the public sector. Procurement delays have led to slow pace of implementation of activities at the field level and low levels of expenditure at all levels.

- The RDT supplies received through PFSCM have been beset with problems of non-compliance with technical specifications when compared to the price quote (PQ) provided by PFSCM. A lot of time has been wasted in communications, transactions and finally disrupted programme implementation.

D-DISCUSSION HELD IN 2012 ON TRANSITIONAL ARRANGEMENTS TO CHANGE PIU RESPONSIBILITY FROM PIU-CNMT TO AN INTERNATIONAL ORGANIZATION (PIU-IO)

CNM aim was to smoothly hand over PIU responsibility to another entity and free itself to focus on the more serious role of technical leadership and expertise for national malaria control and elimination. CNM stand was to distance itself from handling procurement and financial management responsibilities in the next phase and instead ensure further decentralization of malaria operations from central to local level. The new PIU should extract the activities to be funded through donors agencies (such as FH-A) from the Annual Operational Plan (AOP) and directly fund the concerned local authorities. Some specific resources required for CNM support may be part of the AOP prepared by local health authorities if they require CNM expertise such as for capacity building, formal training programs, supportive supervision and on-the-job training and mentoring, etc. CNM will also request commodities and TA to fund-holders. However, the FH-A mission team strongly disagreed with this standpoint and asserted that the new PIU field of expertise is mainly procurement. CNM questioned the mission about the mandate of the new PIU why it is much different from
former PIU (CNM-PIU) and insist the new PIU should take similar same mandate i.e. not responsible only on procurement and financial management but on the whole project implementation. CNM added that in the context of government decentralization policies, financial functions are decentralized to provincial health department for both national budget and external financing. For instance, in the health project funded by the World Bank or ADB for Dengue and NTDs, CNM has no authority in financial management as project money was planned and submitted to Project Secretariat (PS) based at the Ministry of Health (MOH). For the malaria program, a PMI funded project supporting activities in Cambodia is executed by URC, which deals directly with the PHD, with no financing passing via CNM. Similarly, in the NTD program, a USAID funded project for deworming activities at community level is executed by FHI, which deals directly with local health authorities. The role of CNM is limited to policies, M&E, Training and research but not service delivery at sub-national level. The resulting disagreement required intervention from the Minister.
<table>
<thead>
<tr>
<th>Challenge</th>
<th>Options for improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia malaria program financing relied mainly externally assisted</td>
<td>Donors should allow Cambodia access to external aid through a mix of fund holders as the government has systems in place and an explicit strategic</td>
</tr>
<tr>
<td>programs funded through mainly single major fund holder while release of</td>
<td>framework for aid effectiveness. Funding modalities through fund holders should learn from other projects (ADB, URC, WHO, NGOs) where CNM has mostly good</td>
</tr>
<tr>
<td>funds was not predictable.</td>
<td>performance.</td>
</tr>
<tr>
<td>Insufficient harmonisation can mean recipient countries spend a</td>
<td>Donors are encouraged to consider CNM’s plan as an integral part of Web-based Health sector Annual Operational Plan (AOP) and 3-Year Rolling Plan (3-</td>
</tr>
<tr>
<td>considerable amount of time developing multiple plans and reports for</td>
<td>YRP) coordinated by the Department of Planning Health Information (DPHI). The budget for externally assisted projects should be reflected in the overall CNM</td>
</tr>
<tr>
<td>their own programmes to fit in with donors’ different requirements and</td>
<td>budget in line with the on-going finance reform lead by the Ministry of Economy and Finance. The budget for 2015 will be strategic/program based instead of economic</td>
</tr>
<tr>
<td>financial years. These do not always coincide with the MOH planning</td>
<td>classification based. Allocation for each budget line allocation will be made against specific deliverable results. Revitalization of the existing Sub-Technical</td>
</tr>
<tr>
<td>cycles</td>
<td>Working Group for CNM There can be negotiation to identify where donors’ priorities match countries’ needs. Donors participate in fora/ committees for agreeing how they share support in areas of common interest Donors explore opportunities to have similar reporting requirements</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Different donors may require different indicators, and these affect data collection and management systems</td>
<td>Countries develop their own national monitoring and evaluation frameworks and donors use the information from these</td>
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<tr>
<td>Timeframes for the release of funds are often delayed, either through donors’ internal management or through conditions for funding not being met by a country. This can be extremely disruptive and risky, especially where there are multiple interdependent funding sources and/or change in policy on finding modalities. Delays in negotiations on carrying forward of commitment one to next commitment period</td>
<td>It is important to avoid gaps in continuity of support. This is especially important for resistance response, where full and continuous coverage of services is essential. It is also important for progress to malaria elimination. Clear road map for advanced transitional arrangement from one to next commitment period or from the existing funding modalities two innovative modalities</td>
</tr>
<tr>
<td>Different donors offer different incentives to national staff for travel costs etc.</td>
<td>Harmonise as far as possible</td>
</tr>
<tr>
<td>Long term national planning is difficult where grants are short-term</td>
<td>In addition to the AOP &amp; 3-YRP, costed longer term plans (5-10 Years) can be a basis of encouraging coordinated and predictable support</td>
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<td>Disruption of cash flow to community, a Case Study: To prevent the spread of resistance, VMWs in Tier 3 districts (P. falciparum endemic areas which have no evidence of artemisinin resistance and have limited contact with resistance areas) is selected and trained to implement the monitoring of plasmodium falciparum (Pf) resistance with community based surveillance and response for each case beyond the sentinel sites. It is expected that VMW get US$15 for each confirmed case after completed follow-up for 28 days. However, no VMW were able to access to this kind of payment within more than a year after budget approval due to delay in approval of training plan</td>
<td>Pilot on new financing modality in support of communities activities. Time bound rule on approval process e.g. one or two in case of training plan.</td>
</tr>
<tr>
<td>and lack of unclear specific guidance on payment procedure.</td>
<td>Late understanding of epidemiological trends i.e. resistance, which needs an “adaptive priorities” response: Awaiting official result of TES, transition to pre-elimination intervention when morbidity/mortality dramatically dropped.</td>
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APPENDIX 3: SUB-TECHNICAL WORKING GROUP FOR NATIONAL CENTER FOR PARASITOLOGY, ENTOMOLOGY AND MALARIA CONTROL
(Sub-TWG-CN)M)

TERMS OF REFERENCE

The National Centre for Malaria Control, Parasitology and Entomology (CNM) is one of the health institutions of various institutions under the Ministry of Health, which is responsible for the control of vector-borne diseases. It co-ordinates three main programs: malaria, dengue haemorrhagic fever (DHF), Neglected Tropical Diseases (NTDs), except trachoma. Its role as the apex centre of reference and operational research is envisaged to be developed in the years to come.

The overall aim of the CNM is to contribute to the improvement of the health status of the population of Cambodia through reduction in morbidity and mortality due to vector borne and parasitic diseases.

CNM operates under the administrative authority of the MoH and in collaboration with other key partners such as Ministry of the Interior (in particular the departments of Health and Economy and Anti-Crime), Ministry of National Defence, Ministry of Women Affairs and Veteran, Ministry of Education Youth and Sports, Ministry of Health (in particular the Department of Food and Drugs, Central Medical Stores, PHDs and ODs), development partners, international and national NGOs, local governments and community structures, and private entities. Major projects currently implemented include partnership with AFRIMS, ADB, AusAID, BMGF, GFATM/UNOPS, KOICA, NIH of USA, AFRIMS, ITM, NAMRU, PMI/USAID, WHO, World Bank and a host of national and international NGOs.

The main aim of the Sub-TWG-CN is to assist the CNM to successfully implement its three national programs, by identifying potential donors, providing technical assistance, mobilizing and coordinating available resources, resolving issues, supporting advocacy and monitoring the progress made.

Specifically, the objective of the Sub-TWG-CN is to strengthen the management of control programs to enhance integration, partner coordination and decentralization, in line with government plans. Specifically, including the Health Sector Strategic Plan 2008-2015 (HSP), National Strategic Plan for Elimination of Malaria 2011-2025 (NSPEM), Annual Operational Plan (AOP), Joint Annual Performance Review (JAPR) and 3-year Rolling Plans (3YRP) linked to Medium Term Plans.

It is important to note that responsibility for program implementation lies with the CNM and their implementing partners, while the role of the Sub-TWG is to advise on strategic interventions/coordination, and to share information, monitor progress and guide policy related to the relevant programs.
The SUB-TWG-CNMM will comprise of all the program heads and other relevant staff as appointed by the director of the centre. The SUB-TWG-CNMM will also include representatives of other multi/bi-lateral agencies and other government agencies and NGO’s. The group will meet regularly on a quarterly basis at the National Centre with Ad hoc meetings called by the director as deemed necessary.

**The specific terms of references of the SUB-TWG-CNMM are to assist CNM in the:**

1. Formulation, monitoring and evaluation of the national polices, strategies, guidelines, protocol and plans for the programs
2. Exploring strategies for CNM programs advocacies to guarantee political commitment and influence the decision makers.
3. Development, Updating, Monitoring of the AOP
4. Peer Review of new proposals (optional depending on DPs policies)
5. Discussion on the major constraints and offer recommendations to resolve issues of program implementation at various levels.
6. Coordination in activities, resource including knowledge management for malaria, dengue and other parasitic diseases control including those conducted by other government agencies, international organizations, the community and private entities.
7. Advocacy on international and Regional Cooperation
8. Preparing reports for the MOH’s TWGH on the functioning of the Sub-working group on a regular basis and on an ad hoc as necessary.