

Myanmar's Efforts to Combat Malaria under the GMS Program

San Myint Yi¹

Abstract

This research paper is an exploratory research using qualitative approach to data collection. This research will analyze Myanmar's efforts to combat Malaria under the GMS program based on quantitative evidences. The Greater Mekong Subregion (GMS) is developing rapidly in the context of an emerging global economy. Consequently, the crossborder transmission of communicable diseases is growing concern about the Subregional integration in border areas. Among the communicable diseases, malaria is a significant public health problem and has greatly impaired socioeconomic development in the countries of the Greater Mekong Subregion (GMS). Among the six Mekong countries, malaria is the highest burden in Myanmar which is one of the public health problems being addressed by the Government of the Union of Myanmar. Malaria is one of the leading causes of morbidity and mortality in the country. About 70% of total population lives in malaria endemic areas. In this context, this paper aimed to discuss that Myanmar cooperates to combat and prevent malaria under the GMS Program. This research paper also examines to evaluate Myanmar's policies and strategies in implementation processes. Specific objectives of this paper are to examine the factors that lead to the problems of malaria in Myanmar; and to analyze the problems and limitations Myanmar faced in combating malaria. These are some of the questions that this research paper will address.

Key words: GMS, malaria, artemisinin–resistance containment, Roll Back Malaria Initiative, Mekong Malaria Program

Introduction

Malaria is a significant public health problem and has greatly impaired socioeconomic development in Southeast Asia (SEA), especially the in countries of the Greater Mekong Subregion (GMS). Malaria epidemiology in this region is characterized by immense geographical heterogeneity in disease endemic, differential prevalence of four malaria species (*Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium malariae* and *Plasmodium ovale*) which require different drug treatments, and diverse vector systems with different vectorial capacities for the parasites. The malaria epidemiology is closely linked with the physical environment of the Subregion.² In the Subregion as a whole, the majority of confirmed malaria cases are *P. falciparum* and *P. vivax*. There are five major categories of people affected by malaria in the GMS: forest fringe inhabitants, ethnic minority groups, rubber plantation workers, temporary migrants and seasonal workers, and new forest settlers. In the Mekong Subregion, Myanmar is the only country where the incidence of confirmed cases has increased since 1998.

Aims and Objectives

¹ Associate Professor, Dr, International Relations Department, Yadanabon University

²“*Malaria in the Greater Mekong Subregion: Regional and Country Profiles*”, World Health Organization, 2010, p.4 (Henceforth, “*Malaria in the Greater Mekong Subregion*”, 2010)

Specific objectives of the research are as follow: To examine what are the factors that lead to the problem of malaria in Myanmar; To discuss how did Myanmar combat and prevent malaria under the GMS; To analyze what are the problems and limitations Myanmar faced in combating malaria?

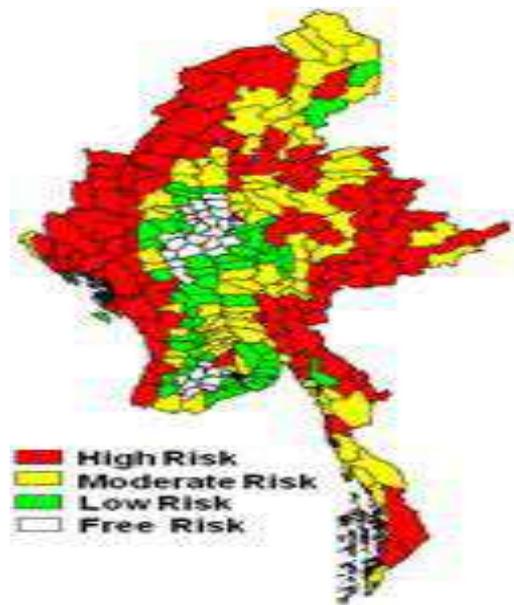
Research Methodology

This is an exploratory research using qualitative approach to data collection. Data collection method is based on primary documents and secondary data will be gathered from multiple sources of evidences such as government reports, documents, publications, journals, and relevant websites. This research will analyze Myanmar's efforts to combat Malaria under the GMS program based on quantitative evidences. This research examines to evaluate Myanmar's policies and strategies in implementation processes. After empirical research and data collection, assessment of whether the information collected are reliable, credible and confirmable has been made.

Malaria Situation in Myanmar

Among the six Mekong countries, malaria is the highest burden in Myanmar which is one of the public health problems being addressed by the Government of the Union of Myanmar. It is one of the leading causes of morbidity and mortality in the country. About 70% of total population lives in malaria endemic areas. All age groups are affected but two third of confirmed cases were 15 years old and above.¹ Myanmar has National Strategic Plan for 2010 – 2015 that sets malaria control goals to achieve the Millennium Development Goals. Approximately 62% of the population is thought to be at risk for malaria (21.4% in high risk, 17.9% in moderate risk and 22.4% in low risk areas), with the highest risk areas concentrated near international borders (See Map 1). Malaria morbidity and mortality in Myanmar peaked between 1988 and 1991 as a result of epidemics, widespread population mobility and drug resistance, particularly along the border with Thailand.

Map (1): Malaria Risk Areas in Myanmar

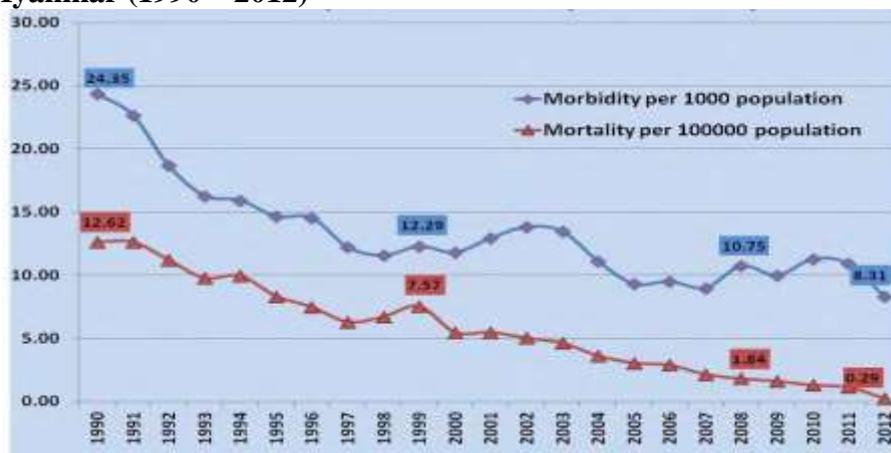


¹Report of Invitational Consensus meeting on Clinical management of malaria, Yangon, Myanmar Academy of Medical Science, DOH, 2004,p.31

Source: Beyrer, C. & Others : *Responding to AIDS, TB, Malaria and Emerging Infectious Diseases in Burma*, p.29

From 1992 onwards, efforts to improve the coverage of health services by installing more hospitals, rural health centers and sub-rural health centers led to an improvement in the overall malaria situation.¹ Myanmar continued to suffer from outbreaks, having experienced a total of 56 malaria outbreaks between 1991 and 2000, most of which were sparked by migration. Since 2000, the frequency of malaria outbreaks has decreased. Population affected by malaria epidemics decline for the next two years from 1995, but increased again in the next three years (1998, 1999 and 2000). *P. falciparum* accounts for about three-fourths of infections. The Reported annual deaths due to malaria were 3,500 in 1998, 4,018 in 1999 and 3,023 in 2000, with case fatality rate slightly over 3 percent. Although long-term trend shows decreasing malaria morbidity and mortality rate in Myanmar but still remains one of the leading causes of morbidity and mortality.

Figure (1): Trend of Malaria Morbidity and Mortality Rate in Myanmar (1990 – 2012)



Source: *Health in Myanmar* 2013, p. 81

In 2011, the country reported 530 027 cases of malaria and 581 deaths. Factors contributing to high morbidity and mortality in the border areas are the topography and climate conditions that facilitate malaria transmission, compounded by difficult communication in these remote areas, low literacy rates of ethnic minorities, difficult access to health services, high population mobility and the prevalence of multidrug-resistant *P. falciparum*². Therefore, malaria control is integrated into the general health services and is part of the National Health Plan.

Myanmar's Activities to Control Malaria

Malaria is one of the diseases that get management priority in Myanmar. About 68% of the population resides in malarial areas. The National Malaria Program was started in 1951. The Malaria Eradication Program was launched in 1957 aiming at

¹Malaria in the Greater Mekong Subregion: Regional and Country Profiles, 2010, p.38

²Malaria in the Greater Mekong Subregion: Regional and Country Profiles, 2010, p.39

eradicating malaria. Due to the limitation of resources, the name of the program was changed to National Malaria Control Program (NMCP) in 1973. The program was integrated with other mosquito-borne diseases in 1978 to form the Vector-borne Diseases Control Program (VBDC), Department of Health, in the Ministry of Health with the collaboration of partners from public and private sectors. In 2002, the new malaria treatment policy was launched for the use of rapid diagnostic test (RDT) and artemisinin – based combination therapy (ACT). As a result, early detection and appropriate treatment was increased, resulting in a rise of recorded morbidity rate until 2003¹. The national strategies are in accordance with the Global Malaria Control Strategy.

A National Strategic Plan 2006-2010 was developed for malaria control in Myanmar. From 2006 onwards, the country received substantial external funding for malaria control from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) and bilateral donors, and also saw the engagement of several local and international NGOs in malaria control in some parts of the country². The combined effort of the NMCP and its implementation partners during the past seven years have led to a rapid expansion of services for malaria prevention and control. Myanmar has finalized their National Strategic Plan for 2010 – 2015 setting malaria control targets to achieve the Millennium Development Goals.³ A national policy and implementation strategy to scale-up the appropriate use of the long-lasting insecticidal nets (LLINs) and insecticide treated net (ITNs) for malaria prevention and control in Myanmar was developed in 2003 and updated in 2009.⁴ According to the 2010-2015 National Strategic Plan for Malaria Control Myanmar's VBDC Program aims for 80% of the population in moderate- and high-risk areas to be using ITNs or LLINs by 2015. Two LLINs per household distributed in the 55 priority townships where 17% of the populations live and where 22% of malaria cases and 32% of malaria deaths were reported in 2003–2007 (5-year average). In addition, mass treatment of existing ordinary mosquito nets with long lasting insecticides has been done in 115 other priority townships. Overall, the coverage of LLINs/ITNs increased from 2.33 million people in 2008 to 4.25 million people in 2011, 7.68 million people in 2012, and sustained at over 8.6 million people⁵. During 2012, the total numbers of 1,450,978 LLINs were distributed and 1,829,631 existing bed nets were impregnated⁶. According to above the mentioned, LLIN/ITN coverage has increased dramatically in Myanmar but it still remains inadequate.

At regional/state level the entomological capacity is weak. Other methods, ecological surveillance and community based surveillance were implemented together with early case detection and management and preventive measures like Indoor Residual Spray (IRS) in developing projects and impregnation of existing

¹Mar lar Soe, Saw Lwin, &Khin Mon Mon: *National Response to Malaria Prevention and Control in Myanmar*, National Malaria Control Program, Department of Health, Nay Pyi Taw, Myanmar, P.335(Mar lar Soe: *National Response to Malaria Prevention and Control in Myanmar*)

² *Malaria in the Greater Mekong Subregion: Regional and Country Profiles*, 2010, p.40

³Mendis, K : “Myanmar :External evaluation of the National Malaria Control Programme”, 30 July-9 August 2012, < www.apps.who.int/.../2012-10SEA_CDS> p.13 (Mendis, K : “Myanmar :External evaluation of the National Malaria Control Programme)

⁴*Ibid.*, p. 27

⁵*Ibid.*,31

⁶*Health in Myanmar*, Naypyidaw, Ministry of Health, 2013, p.84

bed nets in epidemic prone areas. However, IRS and larval control through environmental management are rarely used. Efforts to prevent mosquito biting can only ever be partially successful. Early diagnosis and appropriate treatment (EDAT) of malaria infections is an essential element of malaria control efforts.¹ Since 2005, for malaria diagnosis, microscopes were distributed up to rural health center level and RDT were also distributed up to sub-centers as well as community level. There were 887,969 fever cases were tested by RDT, out of which 294,173 confirmed *P. falciparum* cases were tested with ACT and 159,482 *P.vivax* cases were treated with Chloroquine in 2012².

In addition, the majority of persons with malaria seek treatment from private sector providers, where diagnostic testing may not be available or may be of poor quality. Voluntary health workers (VHWs) have been trained to diagnose malaria using RDTs and provide treatment with ACTs but only in a limited number of townships. Since 2008, a limited number of VHWs have also been trained and are functioning as Sun Quality Primary Care Providers³. Expansion of this VHW network has the potential to bring diagnostic and case management services closer to communities with high-risk of malaria transmission.

With the aim of arresting the emergence and further spread of artemisinin-resistance, Myanmar Artemisinin-Resistance Containment (MARC) Project (2011–2015) was formulated. This was based on the principles outlined by the Global Plan on Artemisinin Resistance Containment (GPARC), and financially supported by a consortium of donors. Implementation of the MARC project was commenced in July 2011, funding by Three Diseases Fund (3DF). The overarching goal of MARC is to build on and strengthen existing control efforts to prevent, or at the minimum, significantly delay the spread of artemisinin resistant parasites within and without the country, and to reduce transmission, morbidity, and mortality of *Plasmodium falciparum* malaria, with priority to areas threatened by artemisinin resistance.

Key challenge to effective case management is the lack of laboratory services and proper health facilities in remote, isolated and inaccessible areas. Effective malaria case management requires that efficacious, high quality anti-malarials are available and used appropriately by both provider and patient according to national guidelines. Incomplete or inappropriate treatment can lead to drug failures requiring additional treatment. Other key challenges include inadequate quality assurance/quality control of medicines, weak regulatory enforcement, manufacturers not compliant with good manufacturing practices, availability of artemisinin mono therapy, and the presence of multiple brands of antimalarial drugs on the market that are hard to regulate⁴. The problem of counterfeit drug in Myanmar continues up to the present. It is an issue which is difficult to address because it involves not only the health sector. A programme to control the proliferation of counterfeit drugs will not be successful without the cooperation of the drug regulatory agencies and police agencies to identify and catch the criminals and the justice departments/ministries to prosecute them. Hence this is a problem which requires multisectoral collaboration at all levels.

Regional Cooperation in Combating Malaria

¹President's Malaria Initiative: Greater Mekong Subregion Malaria Operational Plan FY 2013, USA, USAID, 2013, p.32 (Henceforth: PMI : GMS Malaria Operational Plan FY 2013)

²Health in Myanmar 2013, p.85

³PMI : GMS Malaria Operational Plan FY 2013, p.32

⁴PMI : GMS Malaria Operational Plan FY 2013, pp.40-41

The response to the malaria problem has been seen at various levels, from the countries which developed and implemented their national malaria control programme, to the regional and global levels coming from various forms of regional partnership and multisectoral collaborations as well as from the development agencies and the UN bodies. There is a long history of collaboration across the GMS countries, and beyond, in malaria control.¹All national programmes and partners working on malaria in the GMS are brought together under the Mekong Roll Back Malaria Initiative (RBMI). This was originally launched in Ho Chi Minh City, Vietnam, in 1999. The RBM aimed to consolidate efforts in reducing malaria morbidity and mortality throughout the GMS² and WHO adopted the strategies for reduction and treatment of malaria for the world's people by the year 2010. The most comprehensive and well-known network is the RBM Mekong Malaria project.

For Myanmar, the RBM is part of large project which target 144 million people at risk in the whole Mekong Region and is planned as a joint effort of UNICEF and WHO. The main objective is to ensure a reduction of a substantial incidence of malaria disease. The Mekong region of Myanmar consists of Kachin, Shan (Northern and Eastern), Kayah, Kayin, Mon and Tanintharyi. Altogether 33 townships are situated directly along the border in Mekong Region where about 3 million populations are residing there. In 23 townships, 450 community health workers and local leaders were provided with funds from Japan Aid Grant, complementing the provision of 26,000 insecticide treated nets³. WHO, UNDP and UNICEF are engaged in technical departments and communities to implement the Roll Back Malaria Initiative.

In the specific case of malaria control across the GMS, WHO leads the Mekong Malaria Programme (MMP). The Mekong Malaria Programme aims to facilitate the implementation and monitoring of a comprehensive *MMP Malaria Strategy* endorsed by national authorities and stakeholders to address common Mekong challenges in order to further impact malaria morbidity and mortality.

To emphasize the importance of combating the malaria problem in the region, the ASEAN Health Ministerial Meeting held on 4 July 2012 in Phuket, Thailand organized a high-level consultation convened by the Government of Thailand and the Roll Back Malaria Partnership (RBM) to urge greater political support for on-going malaria control efforts in the region⁴. Border health collaboration between Myanmar and Thailand has been implemented since 2000⁵.

At the regional level, the Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion (ERAR) was formulated. It declared that signatories will strengthen the national and regional responses to contain resistance to antimalarial medicines through existing bilateral, regional, and multilateral channels. In the late 2011 and early 2012, the response to artemisinin resistance in the GMS was carried out jointly by WHO, UK DFID, USAID/PMI and supported

¹“Joint Assessment of the Response to Artemisinin Resistance in the GMS”, Conducted November 2011 to February 2012” *Full Report*, Manila, ADB, 2012, p. 6

²*Malaria in the Greater Mekong Subregion: Regional and Country Profiles*, 2010, p. 2

³ ThinnThinn Aye, Dr. : *Myanmar- UN Cooperation in Child hood Immunization and TB, Malaria and Leprosy Control Programme (1988- 2004)*, Unpublished Ph.D Dissertation, Mandalay University, July 2006, p.62 (Henceforth, ThinnThinn Aye, 2006)

⁴ “Bi-regional Meeting on Health Borders in the GMS”, WHO, Manila, < www.searo.who.int/.../healthy border meeting > pp.19-20

⁵ ThinnThinn Aye, 2006, p.63

by the AusAID and BMGF which are supporting Myanmar.

To facilitated malaria control and elimination in the GMS, an International Center of Excellence for Malaria Research (ICEMR) was recently created with financial support from the National Institute of Allergy and Infectious Diseases, National Institutes of Health, USA. The three target countries of ICEMR are entering the phases of malaria control (Myanmar), pre-elimination (Thailand) and elimination (China), respectively through the four projects which will address the most urgent problems in malaria control.¹ This program will help build up and strengthen regional research infrastructure and capacities, which are essential for sustained malaria control in the GMS.

The U.S. Government has supported malaria control efforts in the GMS since 2000. The U.S. President's Malaria Initiative (PMI) led by USAID in partnership with the Centers for Disease Control and Prevention, implements malaria surveillance, research, commodity distribution and prevention activities in every country in the Greater Mekong Sub-region (GMS)². USAID-supported Control and Prevention of Malaria program (CAP-Malaria) project is started in October 2011 for five years with the largest PMI activity in the Lower Mekong Initiative (LMI) region. This project aims to contain the spread of multi-drug resistant *Plasmodium falciparum* (*P. falciparum*) malaria in the GMS for systematic control of malaria in affected border regions of Thailand, Cambodia and Myanmar.³ The outcomes of CAP-Malaria contribute to the reduction of the incidences and mortalities related to malaria, particularly in the high burden areas of Myanmar, Cambodia and Thailand.

A key element of the cooperation strategy focuses on five sets of "twin cities" on the Myanmar–Thailand border. The twin cities model provides a platform to synchronize malaria control activities in both countries.

The twin cities show in the map (2). They are:

- Tarchileik, Myanmar and Maesai, Thailand
- Myawaddy, Myanmar and Tak (Mae Sot), Thailand
- Phayathongzu, Myanmar and Kanchanaburi, Thailand
- Dawei, Myanmar and Kanchanaburi, Thailand
- Kawthaung, Myanmar and Ranong, Thailand

Minority ethnic groups residing in remote areas along the border and migrant workers in forestry, mining, farming and construction are particularly vulnerable to malaria. Drug resistant malaria can develop from patients who are undiagnosed or fail to complete treatment. Cross-border screening efforts are vitally important to prevent drug-resistance malaria spreading globally⁴. This five-year project is expected to train 1,500 Myanmar malaria technicians on field entomology vector control, case identification and treatment, and

¹“Challenges and prospects for malaria elimination in the Greater Mekong Subregion”, *Manuscript*, March 2013 <www.researchgate.net/.../51072274>

²*President's Malaria Initiative: Greater Mekong Subregion Malaria Operational Plan FY 2011*, USA, USAID, 2011, p.5

³“LMI:Control and Prevention of Malaria; Flagship Project of the President's Malaria Initiative”, <www.Lowermekong.org/.../RDMA%20LMI%20>

⁴“Trilateral Cooperation for Health: Burma Thailand and United States Cross-Border Partnership”, p.1, <www.capmalaria.org/.../111-trilateral-cooperation,May6,2013> (Henceforth:“Trilateral Cooperation for Health”)

community control activities. The Thai and Myanmar Malaria Control Programs and Thailand's International Development Cooperation Agency (TICA) have collaborated with PMI's CAP-Malaria to establish malaria screening points at each twin city. Volunteer malaria workers will distribute bed nets and will be trained to use rapid diagnostic test kits to screen potential cases among the mobile and migrant population crossing the border¹. Information from the intervention areas will be collected and analyzed to improve program efficiencies. A special focus area is the construction workforce at the Dawei deep sea port construction project in Myanmar.

Map (2): The location of the five pairs of twin cities on the Myanmar and Thailand Border



Source: "Trilateral Cooperation for Health: Burma Thailand and United States Cross-Border Partnership", <[www.capmalaria.org/.../111-trilateral-cooperation,May 6,2013](http://www.capmalaria.org/.../111-trilateral-cooperation,May%206,2013)>

One of the project's partners, the Italian-Thai Development Company, is providing additional support for malaria prevention, screening, and treatment services at its Dawei Deep Sea Port work site. So far, these activities have brought in over 50,000 migrant workers from other areas in Myanmar and from Thailand. The workers are often unprepared for the high prevalence of malaria in the Dawei area. CAP-Malaria is distributing long-lasting insecticide nets to prevent malaria infections, strengthening malaria services at clinics, and conducting outreach to diagnose and treat cases in remote worker sites.

The outcomes of CAP-Malaria contribute to the reduction of the incidences and mortalities related to malaria, particularly in the high-burden areas of

¹"CAP-Malaria Project Engages Private Sector in Malaria Control in Burma" <[www.urc-chs.com Home, News center](http://www.urc-chs.com/Home,News%20center)> (Henceforth:"CAP-Malaria Project Engages Private Sector in Malaria Control in Burma")

Myanmar, Cambodia and Thailand¹. As a result of the project's malaria prevention interventions, women, men and children, particularly among migrant populations, will be able to better protect themselves against malaria and prevent drug-resistant malaria by taking the complete prescription of the recommended anti-malaria drugs. At risk populations will have better access to high-quality diagnosis and treatment services in their communities. With the project's support, malaria control programs will have improved processes and programs based on up-to-date quality data on documented accounts from the field.

Research Finding

As mentioned above, the increased connectivity and regional integration in the GMS have improved the quality of people's lives, but have also created opportunities for the spread of malaria and other communicable diseases within and across the GMS borders. Moreover the GMS countries need to continue to press for strengthened commitments from development partners, as well as private and public contractors, to scale-up malaria prevention and mitigation efforts associated with infrastructure projects. Therefore, much of the effort needed to address these problems is national, regional cooperation is needed. Several GMS projects have already been implemented to address such cross-border issues, including regional projects to control communicable diseases.

Through the regional cooperation, Myanmar has seen steep declines in the number of malaria cases and deaths since 1990, continued during the 2000s (see figure 1). However, the decline in the number of reported cases in the period from around 2005 or 2006 to 2010 has been less steep. The earlier steep decline may in part be due to the widespread introduction of RDTs and the consequent improved confirmation of cases and to renewed attention to malaria. The later slowing decline may be because the remaining cases of malaria are occurring in areas and among populations that are the most difficult to reach and are less well served by health services.

Conclusion

According to analysis, although long-term trend shows decreasing malaria morbidity and mortality rate in Myanmar, still remains one of the leading causes of morbidity and mortality. Key challenges to effectively combat malaria are the lack of laboratory services, proper health facilities in remote, isolated and inaccessible areas, inadequate quality assurance control of medicines, and weak regulatory enforcement. However, efforts to address these challenges are already underway. Strategies to address resistance have been developed and are now being implemented. Significant resources are being put into the research and development of alternative insecticides and antimalarial medicines as well as a malaria vaccine. Key innovations in use include smaller ITNs that can be deployed in the cramped conditions experienced by migrants; LLINs; and home-based management of malaria through village-based and mobile volunteers, all supported by targeted communication programs. Yet, the resurgence of malaria remains an ever-present threat. To avoid this, Myanmar efforts to continue and make progress towards the goal of 75 per cent reduction in malaria cases and deaths which targets by 2015 under the GMS program.

¹ "Trilateral Cooperation for Health", p.2

NMCPs and their partners have learned valuable lessons and developed innovative approaches to address unique challenges to malaria control efforts. This will require strong technical leadership and adequate, reliable and flexible funding at both national and regional levels.

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