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Revised Malaria Control Strategy

*Report of an Intercountry Workshop
Manesar (Haryana), India, 30 January – 2 February 2006*

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Abbreviations

ABER	annual blood examination rate
ACT	artemisinin-based combination therapy
ADB	Asian Development Bank
ANC	antenatal care
API	annual parasite incidence rate
ASEAN	Association of South-East Asian Nations
BITTW	broadening involvement through team training workshops
CRC	China Red Cross
DDT	dichlorodiphenyltrichloroethane
DFID	Department of International Development
DOTS	Directly-observed Treatment Strategy
EPI	Expanded Programme on Immunization
GAVI	Global Alliance for Vaccine and Immunization
GFATM	Global Fund to fight AIDS, TB and Malaria
GMP	Global Malaria Programme
HKRC	Hong Kong Red Cross
HMIS	Health Management Information System
IEC	information, education and communication
IPT	intermittent preventive treatment
IRS	indoor residual spraying
ITN	insecticide-treated net
IVM	integrated vector management
JICA	Japan International Cooperation Agency
LLINs	long-lasting insecticidal nets
LQAS	Lots Quality Assurance System
M&E	monitoring and evaluation

MDG	Millennium Development Goals
MERG	Monitoring and Evaluation Reference Group
MMFO	management of malaria field operations
MMV	Medicine for Malaria Venture
MPWs	multipurpose worker
NGO	nongovernmental organization
NICD	National Institute of Communicable Diseases, India
NRHM	National Rural Health Mission
NVBDCP	National Vector-borne Disease Control Programme
RBM	Roll Back Malaria
RDT	rapid diagnostic test
RTAG	Regional Technical Advisory Group
SAARC	South Asian Association for Regional Cooperation
SEARO	Regional Office for South-East Asia
SOP	standard operating procedures
SPR	slide positivity rates
SWAPs	sector-wide approaches
TTT	Transfer of Training Technology
UNICEF	The United Nations Children's Fund
USAID	US Agency for International Development
VBDCP	Vector-borne Disease Control Programme
WHO	World Health Organization
WPRO	Regional Office for the Western Pacific

Executive Summary

Malaria continues to be a serious public health problem in countries of the World Health Organization's (WHO) South-East Asia (SEA) Region. Although there has been a declining trend in the last five years, the rate of decline is not satisfactory. Coverage of key interventions such as indoor residual spraying and insecticide-treated nets is very low. The proportion of *P. falciparum* has been gradually increasing, which partially reflects the problem of drug resistance. The spread of *falciparum* drug resistance is threatening several countries of the Region. Several countries have switched to more effective drugs/combinations that are more expensive without external financial support.

The problem of underreporting due to a weak surveillance system, decentralization of the programme structure, frequent focal outbreaks and malaria transmission that is associated with socioeconomic development and ecological changes further complicated the malaria situation. The population at risk of malaria in the Region is mainly the underprivileged, urban poor and "hard-to-reach" and ethnic groups which generally do not have access to malaria prevention and treatment services and basic health services.

It is obvious that malaria in Asia is very different from malaria in sub-Saharan Africa, thus, several control strategies for that Region are not relevant to the SEA Region. Lack of visibility in the burden of disease, insufficient financial and human resources and poor programme management are main operational constraints.

In order to accelerate the efforts towards controlling malaria in the Region, the WHO Regional Office for South-East Asia (SEARO) organized an intercountry workshop to revise the malaria control strategy from 30 January to 2 February 2006. Participants at the workshop included programme managers and officers from all 11 Member countries of the SEA Region, partners, temporary advisers, observers, and staff from the WHO Secretariat and from the Regional Offices of South-East Asia and the Western Pacific. The total number of participants was approximately 60.

The participants reviewed and discussed the malaria situation and progress made at the global level, in the South-East Asia (SEA) and Western

Pacific regions, and in each Member country. The draft Revised Malaria Control Strategy for the SEA Region for the period 2006-2010 was reviewed and discussed extensively with special focus on programme management, monitoring and evaluation, advocacy, resource mobilization and capacity building. The participants divided themselves into small groups and discussed goals, objectives and other elements of the Revised Malaria Control Strategy. Five key elements were identified in the Revised Strategy: 1) Reform approaches to programme planning and management; 2) Revamp surveillance and strengthen monitoring and evaluation; 3) Scale up coverage and proper use of insecticide-treated mosquito nets; 4) Target interventions to risk groups, and, 5) Scale up control of *P. vivax* malaria.

In conclusion, it was recommended that the SEA Regional Office further refine the revised strategy document and circulate to all Member countries for feedback. It was also suggested that the revised strategy be placed at the Health Ministers' Meeting in August 2006 for official endorsement and implementation by countries.

1. Background

An intercountry workshop of the National Malaria Programme Managers was organized at Manesar in Haryana, India, from 30 January – 2 February 2006. The objective of the meeting was to discuss the revised strategy for malaria control in the World Health Organization's (WHO) South-East Asia (SEA) Region. Programme managers from all Member countries participated in the workshop. Other participants included representatives from the World Bank in India, Japan International Cooperation Agency (JICA), ACTMalaria, Malaria Consortium, Medicines for Malaria Venture, Delegation of the European Commission, WHO focal points for malaria in Member countries, staff from the Regional Offices of South-East Asia and the Western Pacific and from WHO Headquarters. The list of participants is included as Annex 1.

Dr Jai P. Narain, Director, Department of Communicable Diseases, WHO/SEARO, read the inaugural address on behalf of Dr Samlee Plianbangchang, Regional Director for WHO South-East Asia Region. Text of the speech is at Annex 2.

Dr P.L. Joshi (India) was nominated the chairperson and Dr Ferdinand Laihah (Indonesia) co-chairperson for the workshop. Dr Karma Lhazeen (Bhutan) and Dr Sai Naw Ngjin (Myanmar) were nominated as rapporteurs of the workshop. The agenda of the workshop was adopted.

2. Objectives

The objectives of the workshop were to:

- (1) Review progress in implementation of malaria control at the country level.
- (2) Discuss and adopt the revised malaria control strategy.
- (3) Identify resource gaps that are to be addressed in implementing the revised strategy.

- (4) To develop a short-term workplan for scaling up malaria control according to the revised strategy at the country and regional levels in 2006-2007.
- (5) To develop an advocacy plan for implementation of the Revised Malaria Control Strategy.

3. Technical sessions

3.1 Review of malaria situation at global and regional levels

The 1950s-1960s period was the golden age of malaria control in Asia but the disease has made a resurgence since then. The view in subsequent years was that malaria cannot be entirely eradicated. Therefore the objectives and goals were changed to “malaria control programme” from the “eradication strategy” of the past. Considerable progress has been made during this time though political commitment and interest is declining. Drug and insecticide resistance has developed and there are environmental concerns regarding extensive and uncontrolled use of insecticides. The biggest challenges are to ensure greater political commitment and combating the emergence of drug resistance. A review of the best practices should be done while deciding the strategic approach to malaria control.

Review of global malaria situation and progress in implementation of Roll Back Malaria (RBM)

Dr Arata Kochi, Director, Global Malaria Programme (GMP), informed that the “Roll Back Malaria” programme had been renamed Global Malaria Programme.

Malaria control gets the highest priority in WHO after avian flu. Nearly 90% of all deaths due to malaria from across the world occur in Africa. Africa also contributes 67% of the global *P. falciparum* malaria cases, followed by Asia. The focus of the global programme (Roll Back Malaria) has been primarily on Africa. Unfortunately, the progress achieved has fallen far short of the targets. The numerous difficulties in combating malaria in Africa were reviewed. For prevention, there is only 3% coverage with insecticide-treated nets (ITN) and 30% by any other nets. Only six

countries have achieved targeted coverage of intermittent preventive treatment (IPT) among pregnant women. Artemisinin-based combination therapy (ACT) has been introduced in the treatment of malaria and is producing cures. It is, however, not certain as to how long the ACT remains effective. Currently, the two-drug combination is working but the issue of whether a triple combination would delay the emergence of drug resistance needs to be addressed in future. The interventions are clear but the challenge is how is to implement them. There are weaknesses in the health systems, the information management systems, and the application of impact evaluation methods in the programme. The strategies have also turned less efficacious in view of the rapid rise in drug and insecticide resistance. Those responsible for malaria control are not bold and innovative, and the programmes lack an activist dimension. Malaria control is also not as high profile a campaign as, for example, AIDS. Synchronization of the global programme with regional control programmes is required. In Asia mortality due to malaria has declined but morbidity due to malaria remains a persistent challenge. The problem of *P. falciparum* has to be tackled and the challenge of *P. vivax* malaria also have to be addressed across Asia.

The strategy should elucidate the role of the treatment in the reduction of transmission. It should include the various options to be exercised when the health system is weak. Communities also have to be empowered to tackle the problem. There is a good correlation between the coverage and impact though the assessment of impact is both difficult and expensive. Assessment of coverage, therefore, would be very important and necessary to estimate the effect of the programme.

Review of the malaria situation in the South-East Asia Region

Dr Krongthong Thimasarn, Regional Adviser, Malaria, stated that the actual burden of malaria is not known, thus leading to a degree of invisibility for the problem of malaria. The malaria profile for the year 2004 was presented. India reports the maximum cases of malaria (80%) while Myanmar reports the maximum mortality (54%). The annual parasite incidence rate (API) is the highest in Timor-Leste followed by Bhutan, but these are small countries with specific ecological and other challenges. The mortality rate is maximum in Timor-Leste followed by Myanmar.

The key issue in the South-East Asia Region is a weak reporting system as is revealed by the gap between the reported and estimated cases, and the emergence of drug resistance. Most countries have reported chloroquine and SP resistance and some countries are reporting mefloquine resistance in *P. falciparum*. Some focal resistance is reported in *P. vivax* but this is not widespread. The epicentres for drug resistance are the areas along the borders between Thailand and Cambodia and Thailand and Myanmar. There are also reports of failure to combination drugs that are being deployed at the Thailand-Cambodia border which merits urgent investigation.

The strategies adopted for malaria prevention in the Region are indoor residual spraying (IRS) in high malaria-risk areas, and insecticide-treated net (ITN) in high and moderate risk areas. Long-lasting insecticidal net (LLIN) has been recently introduced, though not widely. Bio-environmental control is deployed in some locations. The ITN coverage is very low even though the levels of ownership of the net are high. The proportion of population with ITN has gone up to about 2-20% (average 3%), which is very low. Intermittent Preventive Treatment (IPT) is not the strategy in countries of the Region.

In response to the problem of emerging drug resistance, the National Treatment Policy has been revised for combination treatment in some countries while in others it is under active consideration. Bhutan, Bangladesh, Indonesia, Myanmar and Thailand have changed its policy and India has done so in some districts. Most countries continue to depend on clinical diagnosis and not a confirmed diagnosis. The Rapid Diagnostic Test (RDT) has been introduced in several countries. Monitoring of drug resistance has not been consistent and not proactive. It has been reactivated in most countries of the Region. Fake and substandard antimalarial drugs are rampant and little is known about the magnitude of the problem but for some information from countries in the Greater Mekong Sub-region (Myanmar and Thailand). The private sector has largely been ignored till now and there exists a felt need for partnerships with it.

Of the five global indicators only two have been reported and that too partly. The other three go unreported. These can only be assessed by special surveys, which have not been conducted so far.

Review of the malaria situation in the Western Pacific Region

Dr Kevin Palmer, Regional Adviser, Malaria, Vector-borne and Parasitic Diseases of the Western Pacific Region (WPR), presented that the countries were divided into four epidemiological zones for malaria. The highest incidence of malaria is in Vanuatu, Solomon Islands and Papua New Guinea. In the countries of the Mekong region the case load is lower but the problems are different. The Western Pacific Region relies on information based on confirmed cases. In the People's Republic of China the main problem is from *P. vivax*. Viet Nam's achievements in combating malaria over the last 15 years is remarkable. So also is that of the Lao People's Democratic Republic. Considerable progress has been made in the countries of the Mekong region during the last 10 years, which is attributed to strategies, interventions and intercountry cooperation and partnerships. The decline of malaria in Malaysia's Sabah State was brought about by good management systems and not interventions. The degree of success notched by the programme in Papua New Guinea is difficult to assess because the information system is relatively weak. The main challenge in the Western Pacific Region is how to address the malaria problem in the affected population. The problem of drug resistance is a secondary issue in the context of the main goal of the programme. Vivax is the main issue in WPR. Both *P. vivax* and *P. falciparum* are resistant to chloroquine in that Region. In the Mekong region the terrain is hilly, making it difficult for ethnic minorities to receive adequate government attention. More than 90% of the burden of malaria lies with 5% of the population comprising miners, forest workers and migrants. Young males are the most hit and females or children are affected secondarily. The problem of fake and poor-quality drugs is acute and the treatment of malaria is handled by the private sector. The WPR's focus is on population groups that have been affected. A bi-regional approach is being used, and one of the strategies adopted is the implementation of RDT. Regarding combination therapy, the possibility of artemisinin and amodiaquine was discussed.

Scaling up ITNs has involved plenty of hard work but despite the efforts of the past 20 years no solution seems to be forthcoming. In IRS the spray has to be of a high quality and this becomes a major problem in view of the poor infrastructure to deliver it. Reintroduction of DDT is an important issue. It is likely to work in the drug-resistant areas also since it is a cost-effective intervention in public health programmes. At the same time widespread use of DDT in other sectors has to be reviewed because of

environmental safety concerns. WHO would come out with a publication on the use of DDT in the context of IRS. There are far too many indicators and these need to be reduced and rationalized.

Documenting the success stories of ITN implementation is required. The scaling up of ITN among the risk groups is not an easy task. Therefore, alternatives have to be explored. The key issue relates to the health system problem in Asia. Most of the malaria cases are in the remote areas that are ignored by the government, as is the case with Africa. Community-based efforts are required and there is the need to focus on coverage indicators rather than impact indicators. Resource is not a very big constraint now but ways to absorb the resources are indeed very important. The challenge is to strengthen the district system but they should have a direct access to funds for success.

3.2 Country presentations on malaria control: progress and issues

Bangladesh

Dr A.T.M. Mustafa Kamal, Assistant Director and Programme Manager, made a presentation on the malaria situation in Bangladesh and major achievements in malaria control.

The malaria problem in Bangladesh is confined to about 10 districts, with the highest burden concentrated in the Chittagong Hill Tracts (CHT) Region. These districts contribute to the bulk of the malaria problem in the country. Malaria caused by *P. falciparum* is more widespread and there is resistance to chloroquine. In response, the national policy supports artemisinin-based combination therapy (ACT) where costs are the main constraint. ITNs are used in high-risk populations while IRS is applied only to control the outbreaks. The coverage with ITNs is approximately 46% while the target for ITNs is 60% in the high-risk areas.

The Malaria control programme was described according to the level of health care in the country. Several partners are participating in malaria control in the country, e.g. World Health Organization, World Bank and Chittagong Hill Tract Development Facility (CHTDF) of United Nations Development Programme, BRAC (an NGO in Bangladesh) and NGO Consortium, and others.

The VBDC programme is integrated. The high-risk areas are along the Chittagong Hill Tracts. The country should address the problem in these high-risk areas. District specific operational plans have been drafted and this may be an important input into the malaria control strategy plans. Dialogue has been initiated with organizations of private practitioners, including rural practitioners. BRAC is an international NGO with a strong presence in the country and has raised 11 000 volunteers for health. They are being trained, along with hundreds of other volunteers, by the Malaria Control Programme. As the malaria problem is confined to the border regions it cannot be fully tackled without intense collaboration between India and Myanmar. It was suggested that Bangladesh organize an international meeting to discuss the issues relating to cross-border collaboration.

Bhutan

Dr Karma Lhazeen, Programme Manager of the Vector-borne Disease Control Programme reviewed country situation.

Malaria in Bhutan occurs predominantly in five border districts which are responsible for 95% of the total malaria cases. A substantial reduction in cases has taken place in 2003 and 2004. However, the case fatality rates have remained the same during the last four years. The proportion of *P. falciparum* had gone up to above 30% in the 1970s and has since gone up further. Drug efficacy trials have been carried out since 1984, and the national drug regimen has been changed accordingly. Sulfadoxine/pyrimethamine was used during 1991-1998. Since 1999 artemisinin was used in combination with tetracycline but the regime was very complicated. At present the country is using lumefantrine/artemether (Coartem®) and the programme is very satisfied with it. The cost of the drug is reduced by 50% as compared to when it was initially deployed. There is concern about the country being able to meet the high demand. Those who need the drug most are the "mobile" populations such as the army, police, farmers, migrants and labourers. The Control Programme has been satisfactorily using RDT. DDT was used for IRS until it was banned in 1994, and at that time the disease was at a peak. During 1994-1997 Deltamethrin was a replacement of DDT with good results. ITN was introduced in 1998 and IRS was phased out. In 1998 only 1500 nets were distributed but IRS was phased out abruptly. As a result of this gap produced by discontinuation of IRS during the introduction of ITNs, there was resurgence of malaria in

1999. The tolerance and acceptance of the people who live in hot climates is an issue since people do accept ITNs because of the heat and humidity and claustrophobia (fear of closed spaces). The challenges are changing the behaviour of the people and improving health-seeking behaviours.

There is an urgent need for increasing the capacity of programme management for malaria control. The switch from IRS to ITN should not leave a gap. One of the major problems in Bhutan is linked to frequent cross-border movements on account of trade and other reasons. This has to be addressed through cross-border collaboration and requires help and support from the World Health Organization's SEA Region. This issue being important should be flagged and border meetings to exchange information should be held at least once a year.

DPR Korea

Dr Kim Yun Chol, National Malaria Programme Manager, said malaria cases in DPR Korea are entirely of the *P. vivax* type. A reference was made to the bi-regional meeting of the Western Pacific and South-East Asia Regions that was held in November 2004 in Shanghai, the People's Republic of China. Malaria cases in the country have declined between 2002 to 2005 (from 241 190 to 11 507 cases respectively). In DPR Korea the main problem relates to long incubation period of *P. vivax* and *Anopheles sinensis* is the main vector. The total population at risk of malaria is 11 million. The peak malaria transmission season is June to September. An increase in malaria cases occurred in Kaesong, Jangpung and Touson counties. The reporting of malaria cases was higher in males as compared to females. Amongst the occupational groups, farmers were at the highest risk, with a higher prevalence in the rice field belt than the low hilly areas of the country. The strategy was to carry out mass blood screening with emphasis on microscopic diagnosis. The drug of choice is chloroquine, followed up with primaquine for all confirmed cases. Vector control strategy involves smoking out mosquitoes from their habitats, attacking larvae and environmental management through larvivorous fishes. This was supplemented with the ITN programme. In 2005 a total of 600 000 ITNs were distributed with requisite amounts of insecticides. The smoking out was done by artemesia. The operational strategies have focused on mass chemoprophylaxis with primaquine, entomological studies and scaling up ITNs.

The meeting acknowledged that DPR Korea has considerable experience with prophylaxis and this should be documented. The strategy of intermittent irrigation should be explored to control the breeding of *Anopheles sinensis*. It is most important to treat vivax within 24 hours of occurrence of fever but the emphasis of the programme should be on completion of treatment to prevent relapse. Therefore the indicator to measure the degree of programme achievement should be completion of treatment.

India

Dr P.L. Joshi, Director, National Vector-Borne Disease Control Programme (NVBDCP) of India, presented the integrated vector-borne disease control programme which focuses on malaria, lymphatic filariasis, dengue hemorrhagic fever, Japanese encephalitis and kala azar. A national rural health mission (NRHM) was launched in 2005. This has raised the public health resources from 0.9% to 3%. Malaria programme proposes to take advantage of the mission since NRHM strives to increase the access to health services through the public health services. It has the advantage of a link with nutrition, hygiene and water and sanitation, promotion of decentralization, and removing regional imbalances, which would benefit the malaria programme in India. There is emphasis on public-private mix and intersectoral collaboration. In NVBDCP, there are 17 teams to monitor the drug and insecticide resistance. However, in terms of staffing over the years attrition has occurred amongst the multi-purpose worker (MPWs) males. This has been made up by the village-level workers and volunteers. However, this is not a long-term solution since these health-care providers are not sustainable. The proportion of *P. falciparum* has increased gradually. The slide positivity rate is still high in some of the states. The annual parasite incidence rate (API) at the national level is about 1.9/1000. The Enhanced Malaria Control Programme was started with support from the World Bank in about 100 districts and covering about 1000 PHCs. The project selectively covered districts with API of more than 2/1000, proportion of *P. falciparum* more than 30% and tribal population of more than 25%. The results of this project have been very encouraging. India is also supported by the Global Fund to fight AIDS, TB and Malaria (GFATM) in the hardcore areas. These areas border Myanmar and Bhutan and the affected districts have a large tribal population. The project covers the States of the North-East, West Bengal, Jharkhand and Orissa. It aims at increasing access to

RDT, bed nets and larvivorous fish. A structured plan for capacity development is in place. A computerized web-based information system is being introduced. Urban malaria is a problem and in response to this challenge, India is implementing an urban malaria scheme.

The challenge is to reduce the pressure on chloroquine and reconsider the rationale for presumptive treatment when especially in low endemic districts fever is mostly due to causes other than malaria. Presumptive treatment is prescribed based on fever during the preceding 15 days. In the non transmission season the cases are treated within one week while in the transmission season the lag time may be up to one month. RDTs are being introduced to overcome this problem. There is a need for an improved test for recognizing *P. vivax* malaria since more than 50% of all malaria cases in India is due to *P. vivax*. The quality of microscopic diagnosis should be reviewed and strengthened accordingly.

Indonesia

Dr Ferdinand J. Laihad, Chief of the Sub-directorate of Malaria, summarized that the islands of Java and Bali are almost free of malaria. Since the policy on decentralization of the Malaria Control Programme all data on the disease from Indonesia is district-based. Most of the districts do not send the information on time, leading to incomplete information being presented. The problem of malaria is serious in the outer islands. The GFATM is supporting the work and interventions there. The national survey in Indonesia showed that more than 20 000 deaths per year, representing more than 1% of the total deaths in the country, were caused by malaria. The country is using the combination of artemisinin and amodiaquine. He presented the treatment schedules for different age groups and for different types of malaria. GFATM covers only 13 districts and in these districts, the blood slide examination has increased. These 13 districts are a part of 230 districts in the outer islands. LLIN coverage in GFATM project areas is about 20%, which is low compared to the targeted coverage. The country proposes to reach the target of confirming all cases of malaria and reduce the gap with the suspect cases. Partners to the project include the Japanese embassy, UNICEF, WHO, HKRC, CRC, ARC, GFATM and CARE. The overall financial support from the partners is small. The Central government is providing the bulk of the support and this needs to be enhanced considerably.

The programme is using two types of LLINs, i.e. Olyset® and Permanet II®. Until recently the programme procured only Permanet II®. UNICEF is supporting the use of Permanet II®. The programme is facing a problem with efficacy of Permanet® within six months of starting the use of the nets. This may be related to poor use of the nets.

Maldives

Mr Hassan Samir, Deputy Director, Department of Public Health, presented the malaria situation in Maldives, the only malaria-free country in the Region. There have been no indigenous cases of malaria reported in the country since 1984. The programme has a focus on surveillance to ensure that the country is kept malaria-free. In 2004, a total of 19 992 slides were examined and only eight were found positive. Of these six were *P. vivax*. In 2005 more than 23 062 cases were screened and of these 11 were positive. In addition to disease surveillance, entomological surveillance is undertaken rigorously. This is done in Male, the capital city, as well as in the atolls. DDT has been withdrawn since 1985. Malathion is used for space spraying and for fogging. Temephos is being used as a larvicide. The main programme constraints are low capacity of trained staff, including entomologists. It has been proposed to undertake the training of the staff working at the airports and the sea ports. There is entomological surveillance in selected islands. It would be necessary to do the capacity development at construction sites and at the recreation resorts. There are a large number of them and once they are trained they should contribute to vector surveillance.

The surveillance activities should be continued intensively to contain the re-emergence of malaria. The surveillance should be intensive at the airports and the seaports. The success stories should be documented. The Maldives Malaria Programme should be used in highlighting the importance of partnerships between the Government and the industry.

Myanmar

Dr Sai Naw Ngin, Shan State Malariologist, presented that the Malaria Control Programme is a part of the national health programme and a part of the integrated vector-borne disease control (VBDCP). The technical part of the programme is the responsibility of VBDCP while the implementation at

the township level and below is that of the basic health services. Seventy one per cent of the population in the country is at risk of malaria. The morbidity rate is 11.1/1000 while the mortality rate is 3.67/100 000. Average reported cases and deaths during the last 10 years are 630 000 and 3000 respectively. About 75% of the cases are caused by *P. falciparum* and the problem of multi-drug resistance is rampant. The slide positivity rate is 35%. Among the population at risk, 29% is part of the high-risk segment. Forestry workers, migrants and pregnant women also comprise the high-risk groups. A five-year Strategic Plan was implemented until 2005. The next five-year strategic plan is underway. Both mortality and morbidity have considerably declined during the last five years. The risk areas in the country match with the ecology in the country. Malaria occurs mainly in the forested foothills and hilly areas. It also occurs in the coastal areas of the country. The central plain areas in the country are low endemic. The coverage of IRS and ITNs is low due to financial constraints. The country does not implement intermittent preventive treatment (IPT) as a strategy. IRS is used only for epidemic control. The country established a malaria advisory group. The programme is improving the quality control of diagnosis and antimalarial drugs with the support of JICA, UNICEF, WHO and the Asian Collaborative Training Network for Malaria (ACTMalaria). The programme is also quite concerned about fake and substandard drugs in the country, particularly in the private sector. Efforts are being made to strengthen the Food and Drug Department to work on the quality of drugs. Beyond the formal health infrastructure the country has a large voluntary workforce in the form of Myanmar Maternal and Child Welfare Association (MMCWA) and Myanmar Red Cross Society (MRCS). There are a number of International NGOs who are contributing to the malaria control programme in the country. The coverage with combination drugs was only 33% of the confirmed cases. The coverage of ITNs was about 450 000 and the population covered by IRS was only 17 000. Mobilizing external resources is a major challenge of the programme since the decision of GFATM to withdraw the funding support in 2005. The absorptive capacity is good, but has to be further improved.

Nepal

Dr G.D. Thakur, Deputy Health Administrator, Epidemiology and Disease Control Division, stated that the malaria programme covers 65 of the 75 districts of the country. The disease has emerged into a major problem in 12 districts. High endemic districts are in the terai on the border with India.

The Annual Parasite Incidence (API) has declined from 0.5% to about 0.25%. Only 10% of the cases are caused by *P. falciparum*. In epidemics and in migrant populations the falciparum proportion might increase to 45%. Monitoring of drug resistance has been done since 1997. The treatment failure rates varied between 0-88%.

Lumefantrine/artemether (Coartem®) has been introduced for clinical trials. The cure rate of the combination is quite high. Therefore it is proposed to introduce into the programme. The integrated vector management programme has somewhat lagged behind. The country has procured and distributed 40 000 LLINs. A clear-cut strategy is required to decide who gets the LLINs and who gets ITNs. The conventional bed nets have to be continued to be treated until LLINs take over.

The country has been supported by GFATM and the funds have been released for the first two years. Collaboration with India is very important since 10 of the 12 districts border India. The issue of border collaboration was raised in the discussions. It was suggested that once-a-year border meetings be organized as a part of the multi-country activities.

Sri Lanka

Sri Lanka's Malaria Programme Manager, **Dr Siyambalagoda**, presented the country situation and major achievements over the past decade. As a result of substantial decline in malaria in recent years, Sri Lanka is now debating the issue of elimination of malaria. The problem of malaria has declined after 2000. In 2005 the number of cases was a little above 1000. This is not the first time that such a decline has been observed. A similar pattern was observed in the 1950s and 1970s. There were only 17 cases in 1953 but malaria reappeared by 1967 and spread thereafter. There were reverses earlier but the question is whether the programme efforts will fail again. It is unlikely to fail since now there is a prominent industrial sector in addition to an agriculture base. The infrastructure and medical facilities have improved. The housing situation has improved and so have the literacy rates. There are better communication facilities. The irrigation system and land use patterns have also moved towards the better. The malaria programme organization has been decentralized, and the efficiency of diagnosis and treatment has been enhanced. With a good number of qualified people even in the periphery, there is a range of interventions

comprising of ITN, IRS and environmental control. The style of management has changed and decision-making is less autocratic. However the political environment is not stable despite a temporary halt to the fighting. There is a displacement of population and migration. What might contribute to failure of malaria elimination is the possibility of civil strife, withdrawal of funding or reduced funding by the donors and the government, poor surveillance and vigilance, and managerial indifference. It is also possible that malaria might stage a comeback through the neighbouring country route. The success of the programme depends on sustaining the current ongoing efforts.

The meeting discussed on financial support for malaria control. The WHO budget for the biennium is not very large. WHO's catalytic role becomes limited in supporting the implementation of GFATM projects in Member countries. It was recommended that the programme develop a plan so that the government continues to commit resources. While WHO should make Africa its thrust, it has to continue its efforts towards supporting the countries that are moving towards elimination of malaria. Even when malaria is eliminated, the vigilance as was described by Maldives has to be continued.

Thailand

Mr Suthas Nutsathapana, Chief, Malaria Cluster, Bureau of Vector-borne Disease, summarized the major achievements of programme implementation. The programme maintains verticality even after 50 years. The VBDC includes control of malaria, dengue haemorrhagic fever and lymphatic filariasis. Most of the Thai population lives in non-endemic areas and is not at high risk of malaria though the non-Thai population is at risk. This comprises refugees, migrants and treatment-seeking groups located along the international borders. The number of migrant workers was estimated to be as high as two million. The network of approximately 550 specialized malaria clinics is very useful. The country established 340 malaria clinics in the border areas where the problem of malaria is currently concentrated. These are manned by community workers with RDT and facilities to provide treatment to those testing positive. The country established the National Malaria Drug Policy in 1995 and deployed ACT. Since then the policy has been reviewed once a year. The last revision of treatment guidelines took place in 2005. The problem of malaria in Thailand is concentrated in the border districts and provinces, particularly

those located along the Thai-Myanmar border. Nearly 70% of cases are from the areas of the Thai-Myanmar border. The second high prevalence zone is the Thai-Cambodia border. There is evidence that malaria clinics reported relatively high slide positivity rates (SPR), i.e. 54%, as compared to SPR of 17% in the fixed health facilities. There is an association between the annual blood examination rate (ABER) and the slide positivity rate (SPR). The ABER has gone down by 50%. There should be a system for cross-notification where WHO has an important role to play.

During the last 55 years the use of insecticides has declined. DDT has been stopped and replaced by synthetic pyrethroids which are very expensive. There is a need for further strengthening of collaboration with the neighbouring countries and the focus should be on the areas along the Myanmar-Thai border. Since the real problem of malaria is concentrated along the Thai-Myanmar border it would be useful to develop a multicountry proposal for the sixth round of GFATM. Success stories from the SEA and WP Regions need to be consolidated and analysed to serve as advocacy material.

Timor-Leste

Mr Johannes Don Bosco, Malaria Programme Manager of Timor-Leste, said the programme is in an incipient stage. The Malaria programme is under the Department of Health Services. There is no specific focal point for malaria. The number of local staff is only 22. Due to paucity of medical professionals, 91 clinicians from abroad were recruited by the Government. There are only 45 laboratory technicians countrywide. More than 40% of the population lived below the poverty line and 80% of the people live in areas that are at a travelling distance of at least 70 minutes from the nearest health facility. There is a serious constraint with human resources.

The country received the Global Fund for Malaria Control and is now in the third year of its implementation. Approximately 87% of the total budget for malaria control was from the Global Fund.

Thirteen districts are highly endemic to malaria and no districts are malaria-free. *P. falciparum* is the predominant species. More than 80 000 cases are caused by *P. falciparum* with the proportion of 60%. The peak of clinical suspect cases was in 2004 (i.e. 203 783) and accounted for 25% of

the country's population. The number of cases declined to 142 000 in 2005. The peak season for malaria is during the months of January to March, which is during and after the rainy season. The programme uses an integrated approach at the peripheral level and running it is the responsibility of the district health services. The programme is dependant on passive surveillance. There is also resistance to chloroquine. The first line drugs for treatment of uncomplicated *P. falciparum* malaria are a combination of sulfadoxine/pyrimethamine and chloroquine for uncomplicated malaria. Artemisinin derivatives have been introduced in hospitals. Regarding vector control, the programme depends on the ITNs and information, education and communication (IEC). Malaria during pregnancy is one of the main problems in the country although its magnitude remains unclear. A strategy used for this vulnerable group is to distribute ITNs through antenatal care (ANC). It is also important to know whether ITNs are leading to a response. The per capita expenditure on health is more than US\$ 1. Though this is reasonably high, there are questions on how it is being utilised.

Doctors in nine hospitals were trained in the clinical management of severe malaria and 13 district public health officers have been trained in programme management. Malaria surveillance is being strengthened and vector control efforts are being developed. Data was provided for ITN coverage in pregnant women. Perhaps there is a need to bring together the reproductive health services and malaria control programme. WHO contributed to the programme through the development of a manual of SOPs. There should be therapeutic efficacy trials to decide the policy on drugs for the treatment of malaria.

3.3 Report of the Regional Technical Advisory Group (RTAG) in malaria control

Dr P.R. Arbani, Chairman of RTAG on malaria, summarized the role of RTAG and reported outcome of the first meeting of RTAG:

The Regional Director of the WHO South-East Asia Region established a group of Regional Technical Advisory Group (RTAG) on malaria in 2004 to review the status of malaria in the Region. He accorded malaria control as a major public health problem in the countries of the Region. The terms of reference of the RTAG were established. The first RTAG meeting was

held in December 2004. Several technical recommendations were made by the RTAG. There was concern about the rise in proportion of *P. falciparum* and the geographical spread of multi-drug resistant *P. falciparum*. There was also concern over *P. vivax* because of the associated high morbidity. The evidence on effective strategies to control *P. vivax* malaria is inadequate. There is mismanagement of the workforce for malaria control. Furthermore, the decentralization policy in some countries has had a negative impact on malaria control programmes. The information on the burden of malaria is imprecise. Consequently, malaria in the SEA Region has low global visibility. It is important to have a common understanding about malaria burden estimates being crucial. There are areas in Asia that match the burden in sub-Saharan Africa. Support should be provided to the countries to assess the burden of disease by WHO. The economic studies have been few and far between. Urban malaria is a problem predominantly in India. The funding situation has improved of late but sustainability of the control programme is necessary. The message is that there should be 100% coverage with early diagnosis and treatment and the ITNs. Important recommendations of the RTAG were to strengthen the healthy public policy to promote equity. Tools for scaling up malaria should be considered as public goods and exempted from taxation. Knowing the burden of malaria will be the strongest selling point for seeking GFATM during the next round. There is a need to enhance the capacity of WHO and support the countries in the implementation of the policy on decentralization.

3.4 The Revised Malaria Control Strategy of the SEA Region

Dr E.B. Doberstyn presented the rationale and guiding principles of the Revised Malaria Control Strategy which was drafted during the brainstorming workshop held at the SEA Regional Office in August 2005. The Workshop was held to review the malaria situation and the problems of Malaria Control Programmes in the Region and to take into consideration the recommendations made by the RTAG. Participants at the workshop consisted of experts in malaria control as well as non-malaria specialists. He summarized that the group made several recommendations and provided guidelines for the revision of the Regional Strategy.

The key recommendations included malaria surveillance and programme management. The group suggested that surveillance for malaria be revamped. Outdated surveillance techniques need to be reviewed and

replaced by techniques that are more realistic and suitable to the present situation. The active case finding, indicators that were used during malaria eradication and high target of Annual Blood Examination Rate (ABER) needed to be reviewed and, if required, replaced by techniques that provide better evidence of malaria. One of the alternative approaches to be used can be a special survey to estimate the burden of disease. There is a need to count the cases better than rely on only active case detection. National and regional centres of expertise need to be reviewed to maintain the expertise and to support the control programmes. Regarding drug resistance, which is a key issue for the Region, it was recommended that the evidence-base monitoring of drug resistance be strengthened. Quality control of laboratory diagnosis and antimalarial drugs should be established and strengthened. The problem of malaria in children and pregnant women needs to be clarified so as to develop the strategies for control in these vulnerable groups. The coverage with ITNs is embarrassingly low and it should be scaled up to at least 70%. The advocacy for Asian malaria is to be made a priority in order to ensure sufficient resource, strong political commitment and partnership for malaria control. Asian malaria should be repositioned in the global context beginning with a re-analysis of the situation. The problem of vivax malaria, which is unique to Asia, needs to be highlighted so that the experience with the malaria programme can be applied for addressing the problem in the rest of the world.

Dr Krongthong Thimasarn presented implementation aspects of the Revised Malaria Control Strategy for SEAR.

She presented the goal, objectives and expected outcome of the Revised Malaria Control Strategy for discussion. The expected outcomes of the Revised Strategy are that at least 70% coverage with ITNs, and 70% with early diagnosis and effective treatment should be achieved by 2010 in order to achieve 50% reduction of mortality and mortality of malaria. The quality of malaria treatment should be upgraded to reduce the mortality by 50%. Investment on prevention in order to achieve high coverage targeted at the population at risk is high during the early stage of the implementation, but in the long run will reduce the requirements for diagnosis and treatment of the disease. For programme management there is a need for a paradigm shift for intersectoral action, with greater authority for programme planning and management. Some key mechanisms to improve programme management is the external review of the programme, enhancement of the capacity of the national programme managers and

resource mobilization. Strengthening of the health system should increase the service delivery of the malaria control programme. In areas where the population at risk of malaria does not have access to general health facilities, malaria campaign-type services are needed in the outreach facilities. The possibility of establishing the specialized malaria clinics in hard-to-reach areas should be explored as this would help increase access of quality diagnosis and treatment. The programme should be able to convince the national authorities, national and international partners, donors and WHO/HQ. Malaria is neglected in Asia as it is a complicated disease and the population at risk of malaria is underprivileged. The budget for malaria should not be reduced even when the incidence of malaria comes down in order to sustain programme achievement. Vivax malaria is a cause for huge economic losses. There is a need for an advocacy plan for malaria in Asia. The success stories in malaria control should be documented and shared among Member countries. Unlike the case with other diseases, the population affected by malaria is underprivileged and neglected and has no means to express their sufferings. Malaria activists should be identified and promoted. Finally, in order to effectively implement the malaria control strategy, it is critical to have adequate human resource. There is an urgent need to review human resource for malaria control and build up critical mass by training new malaria staff. In addition to train new staff, there should be some mechanism to prevent brain drain. The programme should also make best use of the experts on malaria in the Region.

The role of the private sector in malaria control is limited and unclear. The programmes should consider linking the private sector with the health system instead of the vertical malaria control programme. A new pitch is required for advocacy at the global, regional national and sub-national levels. The Global Malaria Programme should not be Africa-centred but a true global programme. The programme should be outward-looking and not inward-looking. National partnership with non-health sectors such as education, agriculture, forestry, transport, trade and commerce, environment, labour and public engineering are required since malaria is a developmental and a socio-economic problem and not a pure health problem. The capacity issues are extremely important and district programme planning and implementation are of prime importance. Specific focus should be on training of laboratory technicians for malaria diagnosis. Situational analysis should address the issues relating to the broader problems and take into consideration malaria problems in conflict situation.

The changing of the ecological system has to be considered for effective interventions. People who are working in difficult-to-serve areas are exposed to risk of malaria. We should choose the minimum number of core indicators and try to channelize them into the health information system to sell the strategy. This is important to articulate what is new in the Revised Strategy as compared to the present one, such as what does the strategy bring that was not done earlier. We do not know the actual disease burden in 2000. Therefore we cannot measure the progress to state whether the targets have been reached or not. Therefore there should be a focus on coverage and the outputs to convince the donors that they are getting value for their investments. The challenge in estimation of coverage of treatment is to determine the appropriate denominator.

Dr Chusak Prasittisuk presented an overview of scaling up of malaria prevention interventions. He focused on only two key interventions, i.e. insecticide-treated nets (ITNs) and integrated vector management (IVM). He stressed that the various options in relation to prevention of malaria are based on the different paradigms, the magnitude of the problem, vectors, terrain, accessibility and population movement. In the SEA Region indoor residual spraying (IRS) is deployed only in high endemic areas. The strategy is selective focal sprays using DDT or malathion. Only 2% of the population is covered by any kind of vector control. Nearly 81% of the population at risk is not covered by vector control interventions. The use of DDT has declined to about 5%. The overall use of DDT was about 6000 tonnes. The impact of DDT has been exactly ascertained. With a focus on equity, intended to create a supportive environment, and high priority on health, especially of the disadvantaged populations, ITNs need to be scaled up as a preventive strategy both for personal protection as well as for reduction of transmission. However, the coverage with ITNs is low. Biological control is potentially useful in specific situations but requires strong community participation. The preventive strategies should be consolidated and delivered through an IVM strategy. The key elements of IVM include advocacy, collaboration with other sectors, evidence-based decisions, research, and monitoring and evaluation.

In order to scale up malaria control in the Region, more efforts should be made on information sharing on malaria prevention in particular. The programme managers' meeting should be organized once every year and not once every two years. The vector control meeting should be a part of the malaria control efforts.

Malaria diagnosis and treatment

Dr Krongthong presented the implementation aspects of quality diagnosis and treatment as a part of the revised malaria control strategy. The key elements are evidence-based national policy on drugs. It should be developed, adopted and implemented by the national programme and should apply to all health sectors as well as the private sectors and NGOs. There should be a sustainable system of monitoring the therapeutic efficacy of currently used drugs. Treatment guidelines should be revised as soon as the resistance reaches 10% or more. Presumptive treatment of incomplete dosage of antimalarial drugs given to clinically suspected cases should be discontinued. The implementation of drug policy requires definitive diagnosis, i.e. microscopy or RDT based on the circumstances since confirmed diagnosis of malaria should be a prerequisite for starting treatment with artemisinin-based combination therapy (ACT). Diagnosis and treatment costs should be exempted from tax. Packages of RDT and ACT and social marketing can be useful strategies for early diagnosis and complete treatment of malaria.

There are difficulties in discontinuing presumptive treatment until rapid diagnosis for *P. vivax* gets established. There should be generic recommendation on the sampling framework for therapeutic efficacy studies.

Human resources for malaria control in the SEA Region

Dr Krongthong reported that there is a serious shortage of skilled staff such as malariologists, malaria epidemiologists, entomologists, vector control experts and mid-level programme managers. There are also few training courses in the Region. WHO supports the annual one-week, international course on clinical management of malaria at the WHO Collaborating Centre (CC) on clinical management of malaria, the Mahidol University in Thailand. The National Institute of Communicable Diseases of India (NICD) organized a regional malariology course for six weeks in 2006. There are two parallel courses on comprehensive vector control carried out regularly at Pondicherry, India, and Salatiga, Indonesia. These are of six weeks' duration. The international course on malaria and its control organized by WHO is available in Ethiopia but, since the epidemiology of malaria in the SEA Region is different, this course is of little importance. There are a

number of international training courses organized by the Asian Collaborative Training Network for Malaria (ACTMalaria). These courses are very useful in particular for the four countries of the SEA Region that are members of this network, i.e. Bangladesh, Indonesia, Myanmar and Thailand.

International training courses conducted by the ACTMalaria

Ms Cecilia Hugo, Executive Coordinator for the networks, briefed participants about the establishment of the network and its mission. There are a number of partners involved in this network. The network was informally established in 1996 by a group of Malaria Programme Managers in the SEA and Western Pacific Regions. The mission is to develop capacity, and promote cooperation, collaboration and information exchange. Membership has since been extended to other countries with currently 10 members being part of the network. The ACTMalaria network accepts participants from non-member countries but priority is accorded to member countries. Technical resources are drawn from WHO, CDC Atlanta (USA), Malaria Consortium (UK), local institutes in Member countries and the like. Field work is built into the courses organized by ACTMalaria. To date, five courses on Management of Malaria Field Operations (MMFO) have been organized. The other training courses include broadening involvement through team training workshops (BITTW: three courses have been conducted) which primarily focused on advocacy; course on Transfer of Training Technology (TTT: three courses have been conducted); drug policy development workshops (two workshops were successfully completed); workshops on operational research and judicious use of insecticides for vector control. It was proposed to involve the non-Mekong countries for drug policy and drug use monitoring. It is proposed to adopt these international training programmes and implement at the national level, for instance, to organize national MMFO training in Myanmar and in Lao PDR. The ACTMalaria is also getting involved in the national training for programme management at the provincial and district levels.

Ms Clare Creo presented the key issues on resource mobilization for malaria control

The issue of resource mobilization is closely related with advocacy and visibility of the disease. Almost 80% of the funds for malaria are sourced from national governments. At the same time external support from

international funding is important. The general trends are aid effectiveness and harmonization. There are several global health initiatives, for instance the GAVI for the expanded programme on immunization, and EPI and the Global Fund for AIDS/TB and Malaria (GFATM). The good news was about new and emerging donors in Asia (the People's Republic of China, Thailand and the Republic of Korea) and increased commitment from other donors. The trend is towards sector-wide approaches (SWAPs), basket-funding and moving away from unipurpose funding. The major contribution has come from GFATM. The Roll Back Malaria Initiative (RBM) showed that GFATM funding is not replacing the existing funding. Countries should demonstrate a compelling need to convince donors about cost-effective strategies in implementing the funds. Countries should identify and analyse potential donors to decide who the most important stakeholders are and those interested in malaria control. Small donors can also be very useful in leveraging funds. The issues to be addressed are public health multiple tasks such as integrating ITNs with measles control and integrating malaria control with reproductive health through antenatal care. Countries should also highlight the corporate social responsibility, explore new partnerships and multisectoral opportunities, and examine what opportunities may emerge from the decentralization of malaria control.

Dr Kevin Palmer presented his experience with resource mobilization in the Western Pacific Region

The Western Pacific Region deals with several donors on a regular basis, including the GFATM, Asian Development Bank, Department of International Development (DFID), Government of Japan, US Agency for International Development (USAID), the Rotary International, the Bill and Melinda Gates Foundation, and others. Those who are responsible for resource mobilization have to analyse the gaps and the donors' mission so that the interests are matched. It is also essential that those seeking funds familiarize themselves about the capacity of the donor and who the decision-making authority for disbursement of funds is. Funding is an individual decision. It takes about two to three months to develop a good proposal. Follow-up activity on proposals and funding is necessary. Each donor has a different working system and rules and that must be comprehended. Differences in corporate culture also have to be understood along with identifying the positive and negative aspects. One project should be linked to another to ensure sustainability of the funding. A wish list and the capacity to put together something when required is important.

Dr Steven Bjorge outlines the perspectives of a multisectoral approach in malaria control.

The idea of multisectoral collaboration in malaria control has existed for a long time – as far back as 1938 – though not fully implemented. Roll Back Malaria emphasized the element of the partnership. It ended up in WHO's lap but the intention could not be translated into action. GFATM is now insisting on the adoption of a multisectoral approach. Another example is integrated vector management (IVM) strategy. Partnerships involve other ministries and the private sector and NGOs and sustaining them is a difficult task. Communication is the key to keep partners involved, and ensure that they are followers and not frontrunners. These require adequate salesmanship, competent data and awareness about the needs of partners. It should also be on paper and needs to be modular so that partners know what they should be working on. The challenges faced are inefficiency in coordination, an anti-government bias and vested interests of the partners.

Panel discussion on the Revised Malaria Control Strategy and its implementation by partners and meeting participants

The meeting discussed how the strategic document should look like and concluded that it has to take a more persuasive stance. There should be more efforts directed at advocating the product. A professional writer should be identified to write this document. The Revised Malaria Control Strategy should be included in the agenda of the Regional Committee and the meetings of the health ministers and health secretaries. The issue of packaging is important so that the strategy can be made a turning point in malaria control.

The meeting discussed how to bring malaria to the attention of the governments, partners and the people of Asia. One option is to organize a malaria conference. Such conferences on malaria should not be small and not backyard shows as they have been in the past and therefore it is important for them to have visibility and be on a large scale. In order to strengthen partnerships and intercountry collaboration, there should be a regional formation for SAARC countries along the lines of the ASEAN regional formation.

Research and development in antimalarials: past, present and future prospects, by Dr P.V. Venugopal

Dr P.V. Venugopal presented antimalarial drugs being developed for the portfolio of the Medicine for Malaria Venture (MMV). During the next 10 years there is unlikely to be a new product; the journey from cinchona to artemisinin has been long. There has also been a slowdown due to lack of interest in the private sector. Public-private partnerships are the key to boost the programme on development of new drugs and vaccines in the prevention and treatment of malaria. The drugs that have been developed included mefloquine, halofantrine, artemisinin derivatives and malarone. There are various artemisinin-based combination therapies (ACT), but the only fixed dose combination is lumefantrine/artemether (Coartem®). Fifty six countries worldwide have adopted ACTs. One of the challenges is paediatric formulation of most drugs that are not well established. Another important issue is to address safety of the drugs during pregnancy. A synthetic artemisinin is currently under development by Ranbaxy in New Delhi.

There should be further development and progress on ACT to be administered rectally. Rectal artesunate is available. Regarding the high cost of drugs, especially ACT, it is expected that prices will decrease once the demand for the drugs goes up. Moreover, competition among manufacturers should bring down the price. It is necessary that there should be no counterfeiting. In fact the real cost of antimalarial drugs are really cheap but the cost of drug development has to be incorporated in the initial pricing. Partnerships between the public and the private sector can address some of the difficult issues.

3.5 Surveillance, monitoring and evaluation of implementation

Capacity development for monitoring and evaluation of malaria control, presented by Dr Vijay Kumar

In response to the external evaluation of Roll Back Malaria in 2002, a monitoring and evaluation reference group (MERG) was formed. The terms of reference were defined and various task forces and working groups were convened to address issues such as malaria mortality, morbidity, anaemia,

malaria in pregnancy, development of survey tools and capacity development in M&E. Important tools developed include a malaria survey package comprising of questionnaires and their rationale, tabulation plan, interviewer's manual, supervisors manual, sampling issues, laboratory guide and survey data management tool. The household and health facility surveys can be supplemented by the application of Lots Quality Assurance System (LQAS) and a format to be used in the health facilities and outreach activities. Both the LQAS and the supervisory tool can be used in the programme without the additionality of special surveys. It is difficult to assess mortality accurately but various options have been provided by MERG based on evidence. Anaemia can be considered as an additional impact indicator of malaria programme. A need assessment for capacity development in M&E has been undertaken in Africa and a conceptual guide prepared. The global malaria report prepared in 2005 was launched in Cairo, Egypt. Some of the malaria programmes are well funded. It is necessary to focus on the coverage indicators and a system for tracking progress; this would need enhanced capacity in M&E.

Dr Leonard Ortega summarized the experience of Myanmar in the external review of malaria control programme.

The last external review was conducted in 1985. An external review of the malaria programme was conducted in October 2005. The context changed since the termination of the GFATM project. There was consensus obtained amongst the partners, i.e. WHO, UNICEF, JICA, and several International NGOs. The Ministry of Health decided to support the external review. He explained steps in preparatory phase which are as important as the external review itself. The review protocol was drafted and shared with the WHO SEA Region and HQs, the expertise needed was identified and TORs developed. Key individuals and institutions were asked to prepare background documents for review. The external review was organized during 18-28 October 2005. A large number of background documents were provided for the reviewers. A number of presentations were made and the review members had the opportunity to discuss with different agencies and partners. It included field visits to six different sites by six separate teams. The report was drafted and debriefing conducted. The executive summary and major findings were presented to the Health Minister and to the diplomats, NGOs and the Ministry of Health. The external review is an important input into the new strategic plan. The review has been presented to the donors and they have appreciated the good work and the consolidation of the experiences in the country.

He had recommended that an external review is very important and useful for the programme. However, very few countries implemented this. Thailand conducted an external review in 1995.

Dr Kochi proposed that countries should undertake the malaria programme review including the tracking of financial aspects and the transaction costs. Countries that should be reviewed soon include Sri Lanka. Besides the external country review there should be tools available for sub-national reviews.

The concept of monitoring and evaluation (M&E) with special attention on minimum performance indicators was presented by **Dr Arata Kochi**.

The emphasis on monitoring and evaluation should be on coverage indicators that are easy to measure and validate. M&E should include outputs, i.e. ITN, case management, IRS, and coverage of specific interventions. Case management as an output assesses the number of persons treated at the health facility and in the private sector. Coverage of correct treatment should also be determined and this can be reflected by some indicators such as case fatality rate (routine or health facility survey) and other indicators. An indicator could be number of cases completing treatment. This can be assessed through the Health Facility Survey. Another difficulty is that a large number of patients are treated in the private sector or at home and these figures are not included in the reports. For ITNs it is possible to do it through the household survey or through the health information system. Denominator is a household that is targeted for this intervention. The effective coverage is to be determined by household surveys. IRS is an easier process to obtain coverage data such as the number of households sprayed and number of households targeted. The M&E scheme should be used as a programme management tool. There are several sets of indicators and many indicators are quite complicated. Special surveys have been done in several countries such as Cambodia. That can be used as a model and a starting point.

The M&E should focus on what can be done to strengthen the information system learning from the EPI and TB programme. Health facility and outreach-based information need to be improved and the scope widened by including the private sector. Surveys may be used selectively and the tools for the same are available. There is a need for a focus on

programme management, and the need to link with supportive supervision. Trend analysis should be conducted in the countries where the system exists, though imperfect, is a very useful information. It is important to rank the performance of the district to be able to identify the constraints and suggest corrective measures. The quality of IRS implementation is very complex and very difficult to evaluate. ITN is an alternative while IRS is being used only for epidemic control. In malaria a follow-up system will have to be built in to correctly determine the proportion of patients who complete treatment. This is difficult to assess. Staff are not used to survey and this is something that has to become a part of the programme and there should not be any reluctance to conduct a survey. The guiding principle is to adopt something simple and easy-to-do that can eventually become a part of the programme. ITN can be a good indicator using the households as denominator. Indicators for coverage of case management include the number of cases treated as compared to the estimated number of malaria cases. There should be only one indicator for each objective. He persuaded Member countries in the SEA Region to pilot-test new simplified indicators. The India programme manager volunteered for the pilot-testing. Indonesia said it would like to volunteer to study the impact on coverage. Dr Kochi suggests a very simple system to undertake scaling up. The Myanmar representative expressed his interest in ITN and case management conditional to the approval of the programme manager who is unable to attend the meeting. The programme manager of Bangladesh also volunteered. Overall, the interest generated in Member countries was high.

Malaria country database, presented by Dr Kochi

The Global Malaria Programme is developing a database on malaria. A database already exists, but this is being revisited. It comprises a precise description of the malaria situation, epidemiology, strategies, management structure and the budget allocation. It includes the policy environment on drugs diagnostics, ITNs and IRS. The database also relates to the performance of the interventions currently being used. The proposed next steps are finalization of the framework, headings and explanations, pilot test and finalization. This has to be shared with countries in electronic format, filled by the countries and regularly updated and sent to WHO. This will form the basis for the annual WHO report. The database is proposed to be web-based. The model that is being used is similar to that used by the Three by Five (3X5) of the HIV/AIDS control programme. The database is proposed to be kept simple and about two pages long.

Mr Sunil Mehra summarized the concept in advocacy for malaria as a new initiative.

The Malaria Consortium with support of the Glaxo Smith Kline African Malaria Partnership initiated a malaria project in Africa. The concept of this project is to aid the malaria community in mobilizing political support and increased resources for malaria. The consortium is responsible for implementation in the form of home-based management of malaria and intermittent preventive treatment in pregnancy (IPT). The malaria burden in Africa is the same as HIV/AIDS but has fewer resources. Malaria is not an issue that has been taken up adequately by civil society. The reason perhaps is that enough user-friendly material is not produced. The material that has been produced is valid only for those involved in malaria eradication. It is important to consider policy-makers, advocates, activists and the people as consumers for the material. The issue of encouraging greater involvement of the partners was discussed. The overriding issue is to enlist sustained political support. Media practitioners should increasingly cover the issue of malaria control and advocate for more support.

There should be consensus based on needs and priorities. The focus is on countries that have the maximum needs and those that are poorly supported. The expectation is that there should be one voice, proportionate to the disease burden, better delivery of effective interventions, high quality interventions, and those that can contribute to the development of civil society. The target should be the poor. A total of US \$ 11 million have been earmarked for advocacy.

Parliamentarians of nations should be encouraged to ask questions as to why the government is not adequately supporting the malaria control programme. There is also a need for tracking of the media coverage on malaria. In recent times this has been improving. The next step forward is to organize study tours, parliamentary hearings and discussions. The technical information should be readily available. The advocacy kits should be developed and provided proactively to the target audience. An inventory of the stakeholders, which includes the numerous NGOs that are interested in contributing to malaria control, should be prepared. The results have to be open and transparent. It is important to reflect on the funds that are available and how competently they are being used. The funding available, needs and gaps are important to identify as a starting point. There is a global advocacy task force which should have optimum Asian representation to showcase the needs of Asia.

Advocacy involves name and shame, i.e. complementing those who are doing well and punishing those who are not. Malaria is not a part of the public service agreement. Therefore DFID does not report to Parliament on Asia.

The Millennium Development Goals (MDGs) can be achieved only if there is a focus on the countries with the largest affected population such as India and Indonesia.

General discussion

Operational research, which is crucial for the malaria programme, must be discussed. The complementarity of operational research with the programme is important. There is a need for increase in capacity of operational research. Surveys should be included and verbal autopsies are a subject for operational research, which after validation can become a part of surveillance. Operational research on deaths that have occurred outside the health facility/hospital is urgently required. Verbal autopsy and validation of deaths in adults are also important. Death in hospitals is a reflection of delayed care-seeking and on the quality of treatment. Alternatives to active surveillance should be the subject for operational research. Research on access to diagnosis and treatment is required, especially in population groups that are poor and marginalized. Further development of rapid diagnostic tests and the monitoring of its sensitivity needs to be considered and supported. The challenge is to increase the access to effective treatment. The policy of decentralization of malaria control programme and its impact should be studied.

4. Group work

Participants were divided into three groups. They were given a briefing on group work and the subject headings that they were expected to cover during the group work. Each group had the same task, i.e. to review the draft strategy document with special attention on goals, objectives, key elements of the strategy, indicators and how to advocate malaria. Each group elected a chairperson and a rapporteur. After the group work each group presented their findings and recommendations, which were discussed at a plenary session.

Group I

Group I reported that the human rights issues relating to malaria are important to highlight in the global forum. The Regional Director of WHO should advocate for malaria by discussing it as an agenda item at the Regional Committee and meetings of the health ministers and parliamentarians. The regional forums like ASEAN and SAARC should be engaged and the topic brought up for discussion amongst the heads of the Member States.

Engaging the media and academicians on an ongoing basis will be very useful for the visibility of the malaria control programme in Asia. It will be useful to consider the organization of malaria week in the countries and engage champions and celebrities in the advocacy.

Reform approaches to malaria control programme planning and management is crucial to attract increased funding and commitment and to increase programme efficiency.

Targeting interventions to risk groups is a step in the right direction of the strategy. This can be done by an increase in the level of involvement of women and by developing partnerships with traditional healers.

The efficiency of the malaria control programme can be judged by determining the proportion of outbreaks responded to within 48 hours. The coverage of ITNs should be increased from 10% to 70% by 2010 in order to ascertain its impact on the disease.

Group II

Group II emphasized that malaria is not a public health problem alone but one related to socioeconomic development. The programme has to be developed jointly with the private sector and civil society.

Most malaria cases are among the marginalized population and the focus of work has to be on these populations.

The issue of malaria elimination should also be linked to the tourism industry. These are contrasting issues. Therefore the strategy should focus on the poorest and the well-to-do. This can be a win-win situation. Advantage should be taken of the emerging situation.

A multisectoral focus is necessary and effective and clever advocacy is crucial to the success of the malaria control plans. The WHO staff is ready to reach out to the donors aggressively. Once the contents are well packaged the steps can be translated into actual actions backed up by adequate budgetary provisions in the countries and in the Region. The plans might change and therefore there should be a mechanism for bringing about the change.

The strategy should be clear to all health workers. An example was given of the Stop TB Programme where every health worker knows about the five components of DOTS (directly observed treatment, short-course). It should be simple with inclusion of a minimum number of indicators that are programme coverage. The indicators should be measurable and verifiable.

The poverty basket is getting loaded; the malaria programme should focus on the ethnic minorities.

P. vivax is a unique problem of Asia. Vivax is rare in Africa and different from Asia vivax. There are many different forms of vivax. The treatment for vivax is always insufficient. There is no point being made about this issue. The bi-regional (SEA and Western Pacific Region) collaboration started to look out and not inwards.

Roles and responsibilities of RTAG may be linked to the country external programme review. Focus on evidence-based, surveillance and operational research needed to surge ahead. Also increased focus on coverage of key interventions required.

The multisectoral response needs to be refined. What should be initiated with the donors and partners that can have a major impact on the advocacy? It should highlight intercountry and interregional collaboration and other agencies besides WHO that can help. The SEA Region should take advantage of the Western Pacific Region in developing the success stories jointly.

There should be a strategic map-making, focusing on a one-page map which would help to easily comprehend the difference between the revised strategy and the current one.

Group III

A representative from group III said there should be two strategic documents; one for Member countries and the other for advocacy. The strategic document is to be shared with Member countries and should be acceptable to the countries as a starting point for developing national operational plans. The document prepared by the Regional office should be used. For advocacy the document prepared by the brainstorming group in July 2005 should be used. The objectives were reviewed. The first objective met the SMART (Self-monitoring, Analysis and Reporting Technology) criteria. The interventions should be prioritized.

There is confusion in the goals and targets. The confusion is on account of the timeline for the goals articulated as 2010 in the case of RBM and 2015 by the MDGs. In the absence of availability of accurate information, the figures submitted for MDG should be accepted as the baseline. The gap between the reported and estimated cases is not known and therefore it is difficult to be precise since the denominator is not available. An important point that has been stressed is to bring greater visibility to the programme. Highly affected areas will need greater support from donors and partners. Resource mobilization should be added to the objectives or as a strategy for malaria control. Mobilizing additional resources should be added to the main strategy section.

For each objective there should be one indicator. Some of the indicators included were: (a) Proportion of households with target population using ITNs; (b) Room coverage by IRS; (c) The number of people who received laboratory diagnosis-based treatment; (d) Number of people who received treatment according to the existing national policy in the right dose and for the right duration; (e) Malaria-related deaths; (f) Case fatality rates; (g) Outbreak detection and outbreak response, etc. The programme should aim at determining the number of units reporting (which includes zero reporting). There are no suitable indicators for assessing the number of people who took the complete treatment regimen.

There was also discussion on the targets. The broad agreement reached was that there should be 70% coverage of the population at risk with ITN, 80% coverage of targeted population households covered by IRS and 70% of fever cases should have access to diagnosis and effective treatment of malaria.

It is important to determine the population protected by IRS and the population protected by ITNs. The number of at-risk people who slept under a mosquito net can determine the population protected by ITNs. These indicators can be measured by Health Management Information System (HMIS) and surveys.

To increase the visibility of malaria it is important to estimate the burden of disease and the impact of vivax malaria on the national economy as well as the family income. The cost-benefit analysis of the malaria programme is also required. The programme needs images on malaria and documentation of success stories, which may be national or subnational. Preparation of the Asia Malaria Report should be considered and an Asian malaria meeting organized. A dedicated website is needed on malaria for increasing visibility of malaria.

5. Concluding session

Dr Kochi thanked the group on their agreement to test the key coverage indicators proposed by the Global Malaria Programme. Necessary assistance will be provided to interested countries in testing these indicators. There is also agreement to share the country database. He also urged DPR Korea to participate in this activity since vivax malaria is an issue of concern in Asia and needs a focus. With a network gradually evolving, fundraising should be done jointly.

Dr Samlee Plianbangchang, Regional Director for the WHO SEA Region, participated in the concluding session. He suggested that information is very important for the control programme. Although available information may not be complete, trends of mortality and morbidity can be observed. Member countries should invest in an information system. The implementation of malaria control should be based on evidence and operational research needs to be conducted to provide this information. The strategy should not be rigid but dynamic and user-friendly. Member countries may have to adapt the regional strategy to their local situations. Monitoring and evaluation should be more focused. Targeting in implementation is very important in terms of what this can achieve on the impact. If the programme fails there should be enough evidence to ascertain the reasons for the failure. At the same time the programme should showcase the change and put forward the challenges. This would be

useful in mobilizing additional resources. It is challenging to reconsider if we can afford to implement all the interventions. Since funding is a major constraint it is important to prioritize the interventions in the short term. The Regional Director said he will include malaria in the agenda for the Health Ministers' Meeting this year and shall push this in the subsequent Regional Committee meeting. To implement the revised strategy it should be advocated and a big conference involving partners and donors should be organized next year.

Dr Palmer emphasized that since the two WHO Regions are interlinked it is mandatory for the two Regions to work together. There have been several activities that are bi-regional efforts such as the ongoing Mekong Malaria Project, regional training courses of ACTMalaria and the ADB project on ethnic groups.

Several speakers appreciated the good work done during the meeting and thanked the SEA Regional Office and the organizers for the meeting. Dr Krongthong thanked the group and pleaded for the implementation of the strategy.

6. Recommendations

After taking into consideration the country presentations, discussions on the strategy document and discussions among the three groups, the following conclusions and recommendations have emerged. A consensus was reached for a revised regional strategy, which should be positioned to attract national and global attention.

6.1 Recommendations to WHO and partners

- The next draft regional revised strategy document taking into account inputs from the small group and plenary discussion should be sent to Programme Managers within a month for finalization.
- A strategy is required to guide the countries to prepare national plans and another strategy is needed to help increase visibility of malaria in Asia and help in the mobilization of additional resources as well as sustain political commitment.

- The revised strategy should use and promote a common terminology for uniform understanding of the problem.
- The revised strategy should be presented to the Regional committee before being formally launched.
- WHO should support advocacy efforts to raise the profile of Asian malaria.
- WHO presence and capacity should be strengthened in response to the needs at the country and regional level.
- Intercountry and interregional collaboration should be further strengthened with emphasis on cross-border cooperation through multi country activities.
- WHO should promote external programme review in four countries during 2006-2007.
- The intercountry programme manager meetings should be organized once a year for exchange of information and experience.
- Initiate work on application of programme coverage indicators in three or four countries (Indonesia, India, Myanmar and Bangladesh).
- Provide guidance through operational research to synchronize evidence-based interventions with programme planning and management.
- For advocacy purposes, Member countries should participate in the World Malaria Day event and organize an international conference on malaria in Asia in 2007.
- Support the assessment of the burden of malaria due to *P. vivax*, and provide technical guidance on control and management of *vivax* malaria.
- Support the selected countries moving towards elimination through further intensification of control efforts.

6.2 Recommendations to Member countries

- Endorse the revised malaria control strategy and incorporate it in the national and subnational operational and implementation plans.
- Establish mechanisms to enhance sustained political commitment and multisectoral partnerships.

- Intensify efforts to reach the populations at high risk with 80% programme coverage targets for impact on morbidity and mortality in the Region.
- Improve the human resource capacity for strengthening programme planning and management.
- Re-evaluate the burden of disease and conduct external programme review.
- Sharpen the indicators to assess coverage of key interventions and to accurately measure the programme performance.
- Take appropriate steps to increase the allocation of budget for malaria control (national, local and partners).
- Revamp the surveillance system to be able to recognize and respond to malaria outbreaks and refine programme planning.

Annex 1

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Annex 2

Inaugural address by Dr Samlee Plianbangchang, Regional Director, WHO South-East Asia Region

**(Read out by Dr Jai P. Narain, Director, Department of Communicable
Diseases, WHO Regional Office for South-East Asia)**

Distinguished participants, colleagues, ladies and gentlemen,

It is with great pleasure that I convey to you all greetings from our Regional Director, Dr Samlee Plianbangchang. As Dr Samlee is unable to attend this meeting due to pressing commitments, I have the honour to deliver his address. I quote:

Malaria continues to be a serious public health problem in countries of the South-East Asia Region. During the last five years, the number of reported cases of malaria has varied between 2-3 million each year with reported deaths between 3500-5000. However, it is estimated that about 20 million cases and 100 000 deaths occur each year.

Malaria affects all age groups but the disease is not evenly distributed among population groups. India accounts for more than 75% of the reported cases while Myanmar reports approximately 60% malaria deaths. It is evident that we are still not fully clear of the actual disease burden in the Region.

Under-reporting of malaria cases and deaths is common due to several reasons, such as a weak surveillance system. Although some progress has been made in reducing morbidity and mortality due to malaria, the results are not satisfactory. Progress in implementation is relatively slow and it is likely that several Member States would not achieve the goals and objectives of the Roll Back Malaria Initiative. Focal outbreaks have been reported in several countries. Moreover, the coverage of malaria prevention interventions such as insecticide-treated nets and indoor residual spraying remain very low!

In addition to these problems, the Region is now confronting the rapid spread of drug-resistant *Plasmodium falciparum*. This does not only imply switching to expensive drugs, but also requires a revision of the national treatment policy. This is a complex issue that is further complicated by misuse of drugs and the presence of fake drugs especially at international borders. Anopheles mosquitoes have also developed resistance to several kinds of insecticides.

Ladies and gentlemen,

Malaria is not only a public health problem, but also poses serious economic and developmental challenges, with transmission linked with social, cultural and ecological factors. Moreover, malaria is difficult to control because of environmental changes due to spread of urbanization and other developmental projects and afforestation that create favourable conditions for mosquito vectors. Health programmes, such as the malaria control programme, cannot handle this task as it is beyond its mandate unless strong collaboration is built up with the sectors that are responsible for these socioeconomic and environmental changes.

Ladies and gentlemen,

In order to find solutions to emerging challenges posed by malaria, I set up a Regional Technical Advisory Group on Malaria in 2004. In August 2005, a brainstorming workshop was conducted to review the malaria problem and to develop a new strategy for malaria control. While a clear understanding of the dynamics of the epidemiological and entomological aspects of disease are essential, malaria control strategies in the Region need to be revised in order to be more responsive to such dynamics, as well as to the rapid socioeconomic changes and cultural perspective.

Vivax malaria, which is prevalent in the Region, needs to be carefully reviewed. Our surveillance system should not only assist in assessing the disease burden but also in monitoring the impact of the control programme. The population at risk of malaria should be clearly defined and the programme should be able to improve the access of these groups to proven and effective prevention measures, as well as to treatment.

Ladies and gentlemen,

In this connection, I would like to propose that we focus on the following areas:

First, we should invest more efforts in assessing the burden of malaria in the Region.

Secondly, Member States must accord malaria a high priority. The strategy for its control must rightly be placed on the national and international agendas. We must stress that malaria in Asia has its unique problems and areas of concern. This aspect must be articulated, not only in countries, but also at regional and global levels.

Thirdly, as mentioned earlier, malaria should not be seen as merely a health issue, but as a consequence of environmental changes. Therefore, a broad multisectoral and multidisciplinary approach and partnerships need to be strengthened and sustained.

Fourthly, the malaria control programme should shift its emphasis from a mainly treatment-oriented approach to a well-balanced combination of prevention and treatment. Efforts should be made to scale up effective disease prevention. This is to ensure that we find more ways and means to reduce or stop the transmission of malaria.

Finally, we need a package of tools with proven effectiveness. A package that can generate the greatest impact, if properly applied in communities with different situations. I believe that if this is pursued vigorously, consistently and honestly, it will provide evidence of our progress, in both coverage as well as quality. This will, in turn, lead to reduction in both morbidity and mortality due to malaria.

Ladies and gentlemen,

The time has come to review the situation, and to revise the malaria control strategy at the country level. I hope that during this workshop, Member States will discuss, improve and adopt the revised strategy. We should also aim to implement the revised strategy as soon as possible.

We are all aware that Member States have critical financial, managerial and human resource constraints regarding malaria control. However, I do hope that our concerted efforts and the spirit of dedication of malaria workers will make a difference in this regard.

Finally, I would like to wish you fruitful deliberations and a pleasant stay in Manesar. Unquote.

I will, of course, apprise the Regional Director of the outcome of this meeting. I too wish you all success and a comfortable stay in Manesar.

Thank you.

Annex 3

Programme

Day 1 – Monday, 30 January 2006

0830-0900	Registration	
0900-1000	Opening Ceremony	<i>Dr Jai P. Narain, Director, CDS/SEARO</i>

Session 1: Review of malaria situation at global and regional levels

1000-1030	Review of the global malaria situation and progress in implementation of RBM	<i>Dr Arata Kochi, Director RBM WHO/HQ</i>
1030-1100	Review of the malaria situation in the South-East Asia Region	<i>Dr Krongthong Thimasarn</i>
1100-1130	Review of the malaria situation in the Western Pacific Region	<i>Dr Kevin Palmer</i>

Session 2: Country presentations on malaria control: progress and issues By programme managers from respective countries

1130-1200	Bangladesh
1200-1230	Bhutan
1330-1400	DPR Korea
1400-1430	India
1430-1500	Indonesia
1515-1530	Maldives
1530-1600	Myanmar
1600-1630	Nepal

Day 2 – Tuesday, 31 January 2006

Country presentations (continue)

0830-0900	Sri Lanka
0900-0930	Thailand
0930-1000	Timor-Leste

Session 3: Regional Technical Advisory Group (RTAG) on Malaria

1000-1030 Role of Regional Technical Advisory Group (RTAG) on malaria and report of the first RTAG meeting in December 2004 *Dr P.R. Arbani*

Session 4: The revised malaria control strategy in SEA Region

1045-1230 The revised malaria control strategy in SEA Region:

- Rationale, priorities and guiding principles *Dr E.B. Doberstyn &*
- Objectives, strategy elements and implementation aspects *Dr Krongthong Thimasarn*

General discussion: Talk about various elements of the strategy

1330-1400 Scaling up malaria prevention interventions *Dr Chusak Prasittisuk*

- Integrated Vector Management (IVM)
- Insecticide Treated Net (ITN)

1400-1500 Malaria diagnosis and treatment

- Scaling up early diagnosis and effective treatment *Dr Krongthong Thimasarn*
- Fake drugs and quality monitoring *Dr Kevin Palmer*

1500-1530 Human resources for malaria control:

- Training needs/Regional training courses *Dr Krongthong Thimasarn*
- ACTMalaria International training courses *Ms Cecilia Hugo*

1615-1630 Resource mobilization for malaria control *Ms Clare Creo*

1630-1645 Experience in resource mobilization in WPR *Dr Kevin Palmer*

1645-1700 Multisectoral approach: Principles and country experience *Dr Steven Bjorge*

1700-1800 Partners' perspectives on the revised control strategy *Panel discussion: Partners*

Day 3 – Wednesday, 1 February 2006

Session 5: Surveillance, monitoring and evaluation of implementation

0730-0800 Research and development in antimalarials – past, present and future of MMV *Dr P.V. Venugopal*

0800-0830 Capacity building for monitoring and evaluation of malaria control (Re: MERG) *Dr Vijay Kumar*

0830-0900	Experience of Myanmar in external review of malaria control programme	<i>Dr Leonard Ortega</i>
0900-1000	The concept on monitoring and evaluation (M&E) with special attention on minimum preference indicators	<i>Dr Arata Kochi</i>
1030-1130	Malaria country database	<i>Dr Arata Kochi</i>
1130-1230	Concept in advocacy for malaria as a new initiative	<i>Mr Sunil Mehra</i>

Session 6: Group work

1230-1245	Guidelines for group work	Chairperson
1345-1730	Group work on the revised malaria control strategy in SEAR	

Day 4 – Thursday, 2 February 2006

0830-1000	Presentations of group work	
1015-1230	Drafting of the recommendations and follow-up actions for 2006-2007	Drafting committee
1330-1430	Presentation of group consensus and recommendations	Rapporteur
1430-1530	General discussion Comments by the Regional Director, Dr Samlee Plianbangchang	
1530-1600	Concluding Session Conclusion Closing remarks	<i>Dr Aarta Kochi</i> Chair: Regional Director, WHO/SEA Region

Annex 4

List of working and information documents

- (1) Objectives
- (2) Agenda
- (3) Programme
- (4) List of participants
- (5) General information
- (6) List of working papers
 - The Revised Malaria Control Strategy for the South-East Asia Region (2006-2010) (Draft)
 - Country reports:
 - Bangladesh
 - Bhutan
 - Maldives
 - Nepal
 - Thailand
 - Framework on advocacy plan for the SEA Region (resource mobilization)
- (7) Background documents
 - Report of the 1st meeting of the Regional Technical Advisory Group (RTAG) on Malaria
 - Consultative meeting of National Malaria Programme Managers: Report of an intercountry meeting, Haryana, India, 22-26 September 2003 (SEA-MAL-235)
 - Strengthening Monitoring and Evaluation of Malaria Control Programmes – Report of an intercountry consultation, Manesar, Haryana, India, 16-18 March 2004 (SEA-MAL-236)

- Strategic Plan to Roll Back Malaria in the South-East Asia Region 2005-2007 (SEA-MAL-237)
- Regional Framework for an Integrated Vector Management Strategy for the South-East Asia Region (SEA VBC-86)
- Regional Strategic Framework for scaling up the use of Insecticide-treated Nets (SEA MAL-239, SEA VBC-87)
- CD on Malaria Indicator Survey: Basic documentation for survey design and implementation (Monitoring and Evaluation Reference Group, July 2005)