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First Meeting of the Regional Technical Advisory Group on Malaria

Manesar, Haryana, India, 15-17 December 2004

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EXECUTIVE SUMMARY

Though there has been a declining trend in the last three years, malaria continues to contribute to a significant burden of communicable diseases in the Member countries of the WHO South-East Asia Region (SEAR). The disease predominantly affects the vulnerable and the poor.

The main reasons for not achieving the desired targets in malaria control have been the poor application of the tools and interventions available due to weaknesses in programme management. This led to poor quality of services and inability to sustain the programme. Lack of policy direction also contributed to this situation. Some logistic, operational and technical constraints were also beyond the capacity of the programme.

In order to accelerate efforts towards rolling back malaria, the WHO Regional Office for South-East Asia (SEARO), has established a Regional Technical Advisory Group (RTAG) on malaria with the following terms of reference:

(1) To advise the Regional Director on policies, strategies and activities that are crucial for scaling up malaria control in the Region;

(2) To provide the strategic directions in implementing the WHO Regional Strategy for malaria control in Member countries;

(3) To identify the strengths and weaknesses of the control strategy and to make practical recommendations;

(4) To advise on the use of appropriate and new technology for effective prevention and control of malaria; and

(5) To identify areas of operational research and capacity building required by countries.

The first meeting of RTAG was held in Manesar, Haryana, India, from 15-17 December 2004. After reviewing the malaria situation in the Region, RTAG recommended that indoor residual spraying (IRS), insecticide treated nets (ITN), long-lasting insecticidal nets (LLIN) and effective antimalarials should be recognized as important health enhancing public goods to fight the scourge of malaria in the Region. To tackle the situation, integrated vector management (IVM) should be the guiding principle in vector control. This can be achieved by implementing an evidence-based, cost-effective multidisease

control approach involving rational use of insecticides, use of alternative methods and scaling up of ITN and IRS engaging the local communities. Expansion of diagnosis and treatment should be based on the guidelines established by WHO.

Healthy public policy with its ultimate goal of reducing inequity and ensuring health safeguards in development should be the guiding principle in the control of malaria. A good impact was likely to be achieved through a high quality programme targeted at the poor and vulnerable. A strong and enabling healthy public policy would provide the opportunity for intersectoral collaboration and facilitate social mobilization at the community level. It will help create ownership of the control programme and make it sustainable and truly a people's programme. The same principle should guide cross-border collaboration between countries sharing the malaria problem across international borders.

The following recommendations were made by the first meeting of RTAG to the Regional Director:

- WHO should provide technical support to the Member countries in the development and strengthening of healthy public policy that promotes equity in health and includes malaria control as the foundation for equity in health.
- WHO should encourage Member countries to take steps in public health, enhancing tools for malaria control e.g. ITN/LLIN and the first- line antimalarials as essential public goods. As such, these should be exempted from taxation. The commitment of countries in this regard will facilitate scaling-up community protection against mosquito bites as well as in provision of early diagnosis and effective treatment.
- WHO should provide technical guidelines and support to Member countries in the implementation of IVM and in the expansion of access to diagnosis and effective treatment of malaria.

1. INTRODUCTION

The first meeting of the Regional Technical Advisory Group (RTAG) on Malaria was held at Manesar, Haryana, India from 15 to 17 December 2004. The participants included members of RTAG, staff from WHO Headquarters, the Regional Office for South-East Asia, WHO country offices and one temporary adviser. The list of participants is in Annex 1.

The meeting was inaugurated by Dr A.S. Abdullah, Coordinator, Communicable Disease Control/SEARO, who delivered the inaugural address on behalf of the Regional Director, Dr Samlee Plianbangchang. In his address, the Regional Director said that the number of reported cases in the Region had declined during the last 25 years. The estimated cases of malaria were about 10-fold higher than the reported cases. Maldives had not reported an indigenous case since 1984. The Region had several ecological and epidemiologic subtypes. Malaria affected migrants, children and others who were deprived and marginalized. Malaria outbreaks were common. To address the problem, adoption of a stratified approach for malaria control was required.

Pointing to the fact that the number of cases had remained stable during the last 10 years, the Regional Director expressed concern about the lack of progress in effective control, and the shortage of experts while the control programmes needed to be scaled up. Tools and guidelines had been developed, and technical resource networks had provided evidence for review and revision of the national treatment and vector control policies. Several countries had revised their national treatment policies. A regional strategic plan and a road map had been prepared. US Dollars 150 million had been approved by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) for scaling up the malaria control programme activities in the Region during the next five years. Malaria was still a major public health problem in the Region and therefore new approaches for effective malaria control had to be considered.

After the self introduction by the participants, Dr P.R. Arbani, Indonesia, was nominated chairman, and Dr Panduka Wijeyaratne, Sri Lanka as co-chairman of the meeting. Dr Valaikanya Plasai, Thailand, was nominated as rapporteur. The programme for the meeting is in Annex 2.

2. OBJECTIVES

The first meeting of RTAG was held with the following objectives:

(1) To review and analyse epidemiological trends of malaria in the South-East Asia Region;

(2) To provide the strategic directions in implementing WHO's Regional Strategy for malaria control in the Member countries;

(3) To identify strengths and weaknesses of malaria control at country and regional levels and make practical recommendations;

(4) To identify needs in human resource development and operational research;

(5) To identify potential networking of training and research institutes in the Region; and

(6) To make recommendations on resource mobilization for malaria control in the Region.

3. REVIEW OF THE GLOBAL AND REGIONAL SITUATION

Dr Kamini Mendis (Senior Adviser, Roll Back Malaria, WHO/ HQ) said that the goal of the Roll Back Malaria (1998) initiative was to halve the burden of malaria by 2010. The entomological inoculation rate (EIR) determined the occurrence of malaria. Any reduction in the annual EIR would lead to a reduction in malaria prevalence. Substantial reductions in malaria prevalence could occur when EIR was reduced below 1. When the EIR increased, the prevalence of malaria also increased. When access to treatment was poor, then the outcome was adverse. It was possible to reduce malaria morbidity and mortality in the Region as a result of reduced annual EIR and enhanced access to treatment. The four strategies of RBM were summarized. Intermittent preventive treatment (IPT) for pregnant women and for children that was being promoted in sub-Saharan Africa was not relevant to this Region. Integrated vector management (IVM) was the main strategy. IVM in the Region should aim to reduce vector breeding, decrease man-mosquito contact and reduce the abundance and longevity of vectors. Indoor residual spraying (IRS) relied heavily on insecticides. Insecticide-treated nets (ITN) that needed regular retreatment were labour intensive and difficult to sustain. To overcome this problem, long lasting insecticidal nets (LLINs) were an

alternative. The cost of LLINs were comparable in the beginning to the untreated nets that needed to be treated periodically but their cost was about one third by the end of four or five years. Long-lasting treatment of clothing and other materials could provide protection from malaria and other vector-borne diseases. Despite its advantages, the rate of uptake of nets was disappointingly low. The strategy of linking ITNs (distribution and retreatment) with immunization in some countries in Africa provided optimism for their success. It helped both the immunization as well as the ITNs programmes.

The re-emergence of drug resistant malaria was a tragic development. Dr Mendis said *Plasmodium falciparum* was resistant to chloroquine, sulfadoxine/pyrimethamine and mefloquine. The situation of *Plasmodium vivax* resistance was better. WHO recently recommended the new cut-off point of treatment failure level at 10 per cent for revising national drug policies and switch-over to new drugs. This meant that the first-line treatment guidelines had to be changed in many countries. When resistance was present, WHO recommended the use of combination treatment at all levels of health care delivery. The combination drugs should be available in pre-packaged form. These were all artemisinin-based combination therapy (ACT). Globally, 39 countries had adopted the new policy in line with WHO recommendations. One limitation was the shortage of the new combination drugs and, in particular, artemether/lumefantrine. Global forecasting was done to determine the need for this formulation. The gap in 2005 was likely to increase from about 1.28 million doses to 3.5 million doses. WHO had a memorandum of understanding with the Novartis Company for making the drug available at a predetermined and agreed price. It took about 12-24 months to be able to enhance the production of the drug. WHO was involved in prequalification of the drug, was considering the provision of a subsidy through global advocacy, and to establish the safety of ACT in pregnancy. Dr Mendis said the diagnosis of malaria had become important to target the drugs to only those who were positive in the low or moderate transmission countries. WHO global malaria treatment guidelines were being finalized and would be made available by 2005. Guidelines for home management of malaria were available and were more useful for Africa. These may also be relevant to areas with poor access in the Region. New antimalarials were in the pipeline and she described the portfolio of new drugs under development. A synthetic variant of artemisinin was being developed and it was under phase I trial. A vaccine trial had been undertaken in Mozambique and some reduction in mortality was demonstrated. International financing

had almost doubled but was only a fraction of what was required. USD 940 million had been committed by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) to support scaling up of the malaria control efforts. The challenge was in implementation. The deadline for submission of proposals for the fifth round was June 2005 and final approval was expected in September 2005. A global malaria report on drug resistance was under print and would be available in 2005.

The malaria situation in the Region was summarized by Dr Krongthong Thimasarn, Acting Regional Adviser, Malaria, WHO/SEARO. Only Maldives was free from indigenous cases. About 1.3 billion population in the Region was at risk of malaria. Annually, 2.5 million cases and 4500 deaths were reported. The annual estimates were about 20 million cases and 25 000 deaths. The annual parasite incidence (API) was maximum in Timor-Leste followed by Bhutan and Myanmar. The trends in malaria had declined over the years but there had been a significant increase in the proportion of *P. falciparum,* Dr Krongthong said. The proportion of *P falciparum* had increased in Bangladesh, India, Indonesia, and Myanmar. There was a complicated diversity of the vectors. Over the past five years there had been malaria outbreaks in different countries. Major outbreaks had occurred in the Democratic People's Republic of Korea (DPR Korea), Indonesia in Menoreh hills, in Myanmar, in Thailand on the border with Cambodia, and in India in Rajasthan and Gujarat. The problem of drug resistance was most severe in the Greater Mekong Subregion (GMS) and was spreading westwards. Malaria in pregnancy was not well documented but a situational analysis was in progress in four countries (Bangladesh, India, Indonesia and Myanmar). Dr Krongthong summarized the situation country-by-country based on the data reported for 2003. In India, there was a decline in the reported cases. The problem areas in India were the North-eastern states and Orissa. These were also the areas where the problem of drug resistance was serious. Myanmar had reported a high incidence of malaria for several years and the percentage of *P falciparum was* about 80 per cent. The country reported the maximum number of malaria deaths in the Region. The failure rate for chloroquine and sulfadoxine/pyrimethamine (SP) was high. Thailand had succeeded in reducing the overall incidence of malaria and had decreased the incidence of *P falciparum*. However, the situation was getting worse in the border provinces. In addition, the country reported an almost equal number of malaria cases among foreign migrant labourers, mainly from Myanmar. Multidrug resistant falciparum had been reported along the Thai-Myanmar

and Thai-Cambodian borders. The country reported deterioration of response of *P falciparum* to ACT at its eastern and western borders in 2003. However, a higher dose was able to overcome the problem.

While the case burden in Bhutan was declining, the problem of *P falciparum was* serious and the case fatality rate was high. The situation in Indonesia in the islands outside Java Bali continued to be serious. In Sri Lanka, many gains were achieved. The situation in Nepal was steady.

All countries in the Region had adopted the global malaria control strategy and seven countries had adopted the Roll Back Malaria (RBM) strategy. The countries in the Region were using IRS and a beginning had been made in promoting and distributing ITNs. DDT had been phased out of the Region except in India. The ITN coverage among the population at risk of malaria was reportedly low. It was good only in Bhutan (21%) while it was about 7% in Thailand and Sri Lanka, and much lower in other countries.

In the area of diagnosis and management, Dr Krongthong said that a new treatment policy had been implemented in Thailand and Indonesia. The treatment policy had been revised in Myanmar, Bhutan and Bangladesh. Funding constraints had prevented implementation of the policy on the use of artemisinin-based combination drugs. A policy change had occurred on a small scale in Nepal. No drug policy change was needed in DPR Korea while other countries had not made a policy change.

Malaria remained stable in the Region although some progress had been made since the inception of RBM in late 1998. Drug resistance had increased in some countries of the Region and was spreading. Countries lacked well-trained personnel for malaria control. Dr Krongthong said that GFATM funding provided an opportunity for scaling-up control efforts in countries of the Region.

Discussion points

- The burden of malaria was unclear and imprecise. Without this knowledge it was very difficult to track progress and achieve the global targets. The estimate for the Region made by WHO Headquarters was 100 million cases (and not 20 million as assessed in the Region). This estimate was based on environmental risks. The solution to the problem

was to further strengthen the data base from the countries by working closely with the health management information system (HMIS). It was also important to have a common understanding amongst the countries for projecting the estimates uniformly.

- The importance of frequent exchange of information across international borders was recognized. Information was exchanged frequently between Myanmar and Thailand as part of the Mekong Roll Back Malaria project but there were problems in information exchange between Yunnan Province of PR China and Myanmar. Even though the South Asia border collaboration (Bhutan and India, India and Bangladesh, India and Nepal – SAARC) had been endorsed by the health ministers of the countries, progress in implementation was slow. Collaboration between DPR Korea, the Republic of Korea (ROK) and PR China on the control of *P vivax was* improving. Border collaboration, though important was quite complicated and took time. It should be focused on specific issues of common concern for which there was commitment by national authorities.

- RTAG expressed concern about the problem of *vivax* malaria in the countries of the Region because of the variability in the strains and the lack of evidence for its effective control. Therefore, attention should also be given to *P vivax* in the Region. There was not enough data base on drug resistant *P vivax* and research information on *P vivax* for countries to develop guidelines for the treatment of *vivax* malaria. RTAG was informed that the global data on *P falciparum* drug resistance will be followed by the data base on *P vivax* drug resistance.

- There was not only a lack of trained personnel but also mismanagement of the workforce on malaria. Capacity development of human resources should be a priority.

- In areas with *P falciparum* malaria resistant to drugs, there was no point persisting with these drugs. The national treatment policy should be revised accordingly. The WHO recommendation was to use combination drugs and the best solution to its adoption had to be found.

- Sri Lanka had changed the drug policy at the local level and combined it with effective vector control measures. This had helped to reduce the problem of drug resistance by reducing the drug pressure. Combination drugs like amodiaquine and SP could be considered in areas where

resistance to these drugs had not developed. There was vector resistance to DDT, malathion, and indications of emerging resistance to some pyrethroids although the problem had not been studied adequately. Monitoring of insecticide resistance was poor and needed to be strengthened in the Region.

- At present, GFATM was the principal funding agency. Efforts should be made to mobilize additional resources through application by countries that had not been funded yet or as intercountry projects. At the same time, the countries should allocate the funds approved by reprogramming of GFATM for getting the necessary technical support and for monitoring progress. This should include the support needed from WHO for effective implementation of GFATM funds and for intercountry exchange of experiences.

4. AN UPDATE ON MALARIA DIAGNOSIS AND MALARIA VACCINE

Dr Emiliana Tjitra (Indonesia) emphasized that malaria diagnosis continued to be a big problem. In Indonesia, no malaria microscopy was available in village clinics, especially outside Java Bali. Microscopy was the gold standard and standard case definition was used where microscopy was not available. The definition was adapted from the Global Malaria Control Strategy (GMCS). The limitation was that the symptoms of malaria were non-specific and the case definition was never validated or evaluated. This could lead to considerable under or over-treatment. Self-treatment was also associated with over and under-treatment in a higher proportion of cases while, in comparison, the performance was better in primary health centres where the health workers were making the diagnosis.

Dr Steve Bjorge, WHO Indonesia, stated that the parasite-based diagnosis was triggered by the occurrence of symptoms. This meant that the cases which were not symptomatic were not tested at all. The ultimate aim of the testing was that people themselves should be able to check their blood (like the pregnancy test). Initial costs for microscopy were high but later the costs came down. The costs of rapid diagnostic tests (RDTs) were fixed in comparison. For microscopy to be effective and meaningful, it was important to ensure quality control. The RDTs were heat sensitive and got degraded when the kits were exposed to adverse temperature conditions. When

exposed to ambient temperature, the sensitivity declined in about 1-2 months. There was stability at the central store but it deteriorated in the health centres. Accuracy of the RDTs was dependant on the technique used. The sensitivity was low and it was user dependant. There was little data on the cost effectiveness and public health benefit of the test. The number of products available in the market was constantly on the increase and, therefore, it was necessary to have a method to select the right product for testing. There were several variations and multiple reasons for the variable results. The price was about 0.5 USD per *P falciparum* test and 2-3 USD per combined *P falciparum* and *P vivax* test but actual costs could be higher when handling charges and duties were added. For RDTs to become popular the costs had to be reduced and the test would have to be positive for any malaria whether caused by *P falciparum* or *P vivax*. Quality assurance and quality control was more relevant for the RDTs than microscopy. WPRO-SEARO biregional support networks for quality control of microscopy were important.

Dr Bjorge also summarized the progress of work on malaria vaccines. At least 35 candidate vaccines were under consideration, he said. Four types of vaccines had been tested. SPf66 vaccines had shown variable results. Poor results were reported in Africa while there were good results outside Africa. The protection was good for three months and improved considerably after a booster was given. RTSS results were promising. Recently, RTS S AS02A vaccine had shown promising results in Mozambique. The protective efficacy varied between 30-45%. The efficacy in reducing severe malaria was better. Even though this was a promising vaccine, it was not likely to hit the market before 2010. It required a three-dose schedule and while it may be useful for certain groups; it was not likely to be of use to the general population.

Discussion points

- Microscopy, even though reliable was difficult to do in the peripheral and inaccessible areas. RDTs had been associated with 5% failure rates. Microscopy was the gold standard, RDTs may be considered as supplementary to microscopy in difficult areas and emergency situations. Definitely, RDTs were not a replacement for microscopy. The failure rate of RDTs was a matter of concern. A quality control system for RDTs needed to be set up.

- In case RDT of only *P falciparum* was used, it was recommended that slides of cases testing negative should be checked for *P vivax*. Experience with RDTs in earthquake-affected areas in Gujarat State in India was positive. Good malaria diagnosis was an indication of a good health system and would most likely impact on malaria morbidity and mortality and other diseases.
- There was a need for establishing the systems prior to adoption of a policy on the vaccines for programme success. Any vaccine that was useful in a high transmission situation was likely to be more effective in a low transmission situation.
- RTAG appreciated the efforts made to develop vaccines for malaria control but suggested that to reach the goals of RBM, funds should be spent as a priority on diagnosis, treatment, vector control and capacity development.

5. REVIEW OF DRUG RESISTANCE IN THE SOUTH-EAST ASIA REGION

Dr Neena Valecha, Malaria Research Centre, Delhi, India, discussed the implications of emerging and increasing drug resistance in malaria. The challenges included lack of data, inadequate monitoring, lack of alternative drugs, pressure of drugs, and slow development of new alternative drugs. WHO standard protocols for monitoring the therapeutic efficacy of antimalarial drugs were available. The failure rate in chloroquine which was the first-line drug was 57%, and in chloroquine (CQ) plus sulfadoxine/pyrimethamine (SP) the failure rate was 28.3% in Bangladesh during 1999-2003. In Bhutan, the policy was complicated. Based on clinical evidence, CQ and SP resistance was reported. At present, artesunate and doxycycline combination for a period of 10 days was being used but it was proposed to introduce artemether/lumefantrine. In India, there were pockets with drug resistance. Most of the resistant cases were in Orissa, the north-eastern states, project areas with population movement and along international borders. Studies showed late treatment failure with CQ thus stressing the need for adequate follow-up of cases. Based on recent recommendations of the national advisory group, artesunate and SP were recommended as second-line therapy where failure to chloroquine therepy was detected. However, the drug policy would be reviewed shortly. A study

on the Indo-Nepal border showed that there was a high level of CQ resistance in Darjeeling in India while there was some evidence of SP failure in Jhapa district in Nepal. There was little evidence of drug resistance in *P vivax* in India. In Indonesia, the failure rate was prominent for CQ and SP on treatment of *P falciparum*. There had been reports of CQ resistance to *P vivax* also. In Myanmar, there was widespread evidence of resistance of *P falciparum* to CQ and SP but there was good response to mefloquine in most of the areas except in its eastern border. The national policy was revised accordingly.

In Nepal, resistance was widespread for CQ while the response to SP was variable. In Sri Lanka, CQ resistance was reported but not to SP except in certain pockets. There was no report of resistance in *P vivax*. In Thailand, CQ and SP resistance was widespread and there was some degree of resistance to mefloquine. However, high doses of mefloquine were still effective. There had not been any report of *P vivax* resistance to CQ. There were difficulties in extrapolating the findings of a limited number of studies in small units like primary health centres to larger units like districts or states due to variability in epidemiology and degree of resistance in large countries such as India.

Dr Emiliana Tjitra (Indonesia) presented the Indonesian perspective on Artemisinin-based Combination Therapy (ACT). The patients qualified if the case was confirmed with microscopic diagnosis, and complete treatment of amodiaquine and artesunate was then prescribed. The emphasis was on improving the treatment practices. Artemisinin was never prescribed as a single drug. The drugs used for *P vivax* were chloroquine and primaquine. The issues relating to combination drugs needed to be addressed urgently, she said.

Dr Leonard Ortega, WHO Myanmar, stated that in Myanmar, nearly 400 000 slides were examined each year and 25% of them were positive. The problem was more pronounced in people above 15 years and may be related to working outdoors. In September 2002, the drug policy was changed following the recommendations of the Malaria Technical Advisory Group convened by the Ministry of Health and WHO. For first-line treatment of *P falciparum,* the policy recommended the combination of artesunate and mefloquine. Artemether/lumefantrine was mentioned as an alternative. Chloroquine was still the drug of choice for other species. The policy included options for treatment of malaria during pregnancy and for severe cases of

malaria. The drug policy had been endorsed by the Myanmar Academy of Medical Science and accepted by the Myanmar Medical Association. It was being actively promoted among importers and distributors of drugs in the country, both in the private and public sectors.

Dr Ortega said that some resources were provided by WHO (from its grant from the German Government and the RBM Mekong Initiative) by UNICEF in 85 townships, JICA and International NGOs and the Red Cross for malaria control projects in the country. The GFATM proposal for malaria was approved in the third round. The availability of funds will help enhance the coverage with combination drugs. Training material had been suitably modified and workers at different levels needed to be trained. The training should cover private practitioners also. Since combination treatment was very expensive, the policy was to treat only the laboratory confirmed cases. The Department of Medical Research was involved in evaluation of the quality of RDTs. In collaboration with JICA, arrangements had been made to monitor the quality of the drugs. Monitoring of drug adherence was also needed. The current coverage of ACT was only 25% of the population at risk of malaria, Dr Ortega added.

Discussion points

- The Global Fund had appreciated the efforts made by the countries to change their policy on drugs based on information on drug resistance. Provision for monitoring of drug resistance and inclusion of ACT were considered during the assessment of the proposals by the Global Fund. This should motivate countries to review their respective national policies and establish facilities for the monitoring of drug resistance.
- The use of artemether/lumefantrine was part of the National treatment policy in Myanmar but the drug had not been registered. The health ministry was ready to allow the use of this drug since WHO has recommended it.
- The issue of adding primaquine to ACT was being debated. Patients on ACT were likely to achieve a rapid gametocitocidal effect for immature gametocyte. However, as mature gametocytes presented prior to treatment could only be eliminated by primaquine, the drug should be added to the regime for radical cure to maximize impact on transmission

reduction. Thailand reported some 5-10% gametocytemia rates among symptomatic patients attending malaria clinics. Primaquine was prescribed to all *P falciparum* cases in the country regardless of gametocytemia.

6. TREATMENT OF SEVERE MALARIA

Dr Sornchai Looareesuwan, Thailand, stated that the objective of treatment of uncomplicated malaria was to provide radical treatment while for severe malaria the focus was on saving the life of the patient. For severe malaria, the drugs available included quinine and artemisinin derivatives. Quinine was an effective drug but its side effect was hypoglycaemia. Intramuscular quinine could be used, provided it was given as deep injection. The mortality rate of the study group treated was lower in artemisinin derivatives group than in the quinine group though the difference was not significant. A comparison of quinine and artesunate showed that artesunate was better tolerated, and had faster action in fever and parasite clearance, whereas quinine added toxicity but no benefit. Dr Somchai said, cure rates were best in the group given artesunate and mefloquine as compared to artesunate alone or quinine. When artesunate was used in combination with mefloquine, mefloquine should be prescribed together with the last dose of artesunate to prevent the high rate of recrudescence. Artesunate had been used successfully in Viet Nam, Thailand and PR China. Artemisinin suppository was as good as parenteral drug. Besides antimalarials, there was a need for good nursing and supportive treatment, especially for complications. The major problems in severe malaria were cerebral complications, acute renal failure, pulmonary oedema and lactic acidosis. In patients with renal failure, about six cycles of haemodialysis were needed to improve the condition.

According to Dr M. Abul Faiz, Bangladesh, the problem of malaria was serious in the five districts of Bangladesh bordering Myanmar and India. The mortality due to malaria had not declined. Cases of severe malaria admitted in tertiary hospitals were found to have multiple organs and systems affected. The mortality was three times higher in pregnant women as compared to non-pregnant ones. Nearly 25% of the patients had not been seen before reporting to the medical facility. Rectal suppository trials had been conducted with more than 8 727 patients enrolled, many of them being moderately to severely affected. The mortality was less than 2%.

Dr Faiz said that the mortality rate in severe malaria depended on whether there was multi-system involvement and on early initiation of specific treatment. Artemether/lumefantrine has been registered in Bangladesh but was not readily available. It was recommended in the national treatment regimen 2004, and also introduced at the Indo-Bangladesh and Bangladesh-Myanmar borders by MSF. A multicentre trial was ongoing, comparing parenteral quinine and artesunate. Early published reports and interim reports from the present study indicated that parenteral artesunate was better than quinine. The importance of initiating the treatment early to reduce mortality was stressed.

Discussion points

- Multi-organ failure and renal failure were common in severe malaria in some parts of India. This was also being noted in Thailand but the reason was not known. This may be related to the strain of malaria responsible for the severe disease or a complication of the drugs being used. This needed further investigation.
- In cases of *P falciparum,* treatment should be started before the disease progresses to an advanced stage. Early intervention was the key. This treatment should be started in the first 24 hours of the occurrence of the disease to prevent complications and death. Consideration should be given to early home treatment of malaria.
- Rectal artesunate can be provided as a full course. However, the full dose of rectal artesunate had not been recommended by WHO. Suppository drug had been used in PR China for more than 30 years. Initially, it was used as a crude product. Acceptance of rectal suppository was an important cultural issue. Efficacy of arteether and artemether was comparable.

7. ANTIMALARIAL DRUG QUALITY – MEKONG EXPERIENCE

Dr Krongthong Thimasarn, WHO/SEARO, reviewed the situation on the quality of drugs, citing the experience in Mekong countries. The major problems relating to malaria in the Mekong Region which included Cambodia, Lao, Myanmar, Thailand, Viet Nam and Yunnan Province of PR China included drug resistance, low quality of drugs, forest and forest fringe

malaria. While the cost of chloroquine was only a few cents, the combination drugs recommended by WHO were expensive i.e. about 3-5 USD. Consequently, there was a greater risk of fake and substandard drugs. In 2001, there were indications that more than 30% of artesunate collected from international borders of Mekong countries were fake. At that time dye test was used to detect fake artesunate and other methods were used including the physical appearance of the drug. A useful test to detect the problem was Thin Layer Chromatography technique. The US Pharmacopiea in collaboration with the US Agency for International Development (USAID) had provided the test kit for detection of fake/substandard drugs. This could test about 30 drugs including six antimalarials and lasted for about one year. The test kit had been developed by German Pharma Health Fund (GPHF). The issue of poor quality drugs was more complicated in countries where most of the drugs used were accessed from the private sector or from drug peddlers. The problem could also occur in Government facilities. Besides the detection of the problem, action was needed on drug regulation also. Cambodia had tried to counter the problem through an integrated approach, i.e. monitoring of drug quality and advocacy as well as strengthening drug regulatory actions. There should be evidence collected for detecting the problem since the tools were available. In view of the problem likely to become worse with the introduction of artemisinin-based combination drugs, it was time to implement drug quality in the Region. Potential donors were interested in supporting this effort.

Discussion points

- The programme should give greater attention to controlling fake and substandard drugs in order to ensure adequate cure rates and contain the problem of drug resistance.
- Treatment had to be provided in the public health sector and made accessible. Since malaria predominantly affected the poor and the disadvantaged, quality treatment had to be provided free of cost.

8. MALARIA INFORMATION SYSTEM AND GIS IN CONTROL OF MALARIA AND EPIDEMICS

Dr Pratap Singhasivanon, Thailand provided an update on the geographical information system (GIS) for malaria. The challenges were quality,

completeness, timeliness, and relevance. The GIS was only a tool and would work if there was good data. It had been used in the non-health sector for a long time. The success of GIS depended on good data base management. The Mekong malaria control programme was cited as an example. Two monographs had been published by SEAMEO-TROPMED and the third one was underway. It was important to get timely information to facilitate planning. GIS had the potential for epidemic forecasting, monitoring of drug and insecticide resistance. This helped to stratify the malarious areas and in spatial studies on vectors.

Dr Pratap said that the changes in distribution of *P vivax* and *P falciparum* could be determined. The data base could be linked to migrations and the trends in malaria. It could be used at the district and even at the village and the household levels. GIS had been used for other diseases also. An example was given of the Mekong Basin Disease Surveillance project where information was exchanged on 10 diseases on a daily basis. Through remote sensing, the land use pattern and the changes in malaria trends were being studied. GIS was a support to surveillance and not a replacement.

Discussion points

- GIS was not being used widely because the national governments were not interested in using the information for planning the programme and because the required capacity was inadequate.
- GIS information could be accessed but it cost money and the programme should be prepared to invest in it. WHO was promoting HealthMapper, a free GIS software as a tool and had organized training to develop the capacity of key persons in the national programmes.

9. SOCIAL MOBILIZATION AND TRAINING METHODOLOGY FOR CAPACITY DEVELOPMENT

Dr Valaikanya Plasai, Thailand, stressed that the tools for social mobilization existed but needed to be effectively and extensively applied. All patients of malaria, whether symptomatic or asymptomatic, should be adequately treated. To succeed, a bottoms-up approach was needed where people had a lot more to say in decision making and were empowered to make improvements. Human behaviour contributed substantially to malaria. The

approaches adopted included social mobilization, social marketing, information, education and communication (IEC) and communications for behavioural impact (COMBI). It did not matter which strategy was adopted – it should be done well. Need assessment was important for the success of social mobilization.

Dr Valaikanya said that the desirable behaviour and behavioural objectives should be defined right at the outset. There was a need to constantly monitor the achievement of the behaviour and objectives. Social mobilization took into consideration the intersectoral and environmental factors. Healthy public policy needed to be promoted along with health impact policy.

She gave the example of Mr Meechai's highly successful condom promotion campaign for the family planning project in Thailand. Training should be targeted to competency development. Adult learning was an integral component and appropriate teaching and learning aids had to be developed. Currently, e-learning and distance learning were popular in the area of training. However, self-learning was important but had to be developed carefully and planned for success. Training was an expensive activity with direct and indirect costs.

Discussion points

- Professionals, health care providers in the public, private and NGO sectors contributed minimally to the health of the people while changes in lifestyles, environmental factors and socioeconomic factors were important in malaria control. Efforts were needed to improve the day-to-day life of people. It did not matter whether IEC, social mobilization or COMBI were used for behavioural change. Whatever strategy was chosen, it should be done well. People should be involved right from the outset and the impact assessed. To do this effectively, large investments were needed since behaviour change does not come cheap.
- The sustainability of social mobilization was identified as an issue. People understood the problem but were not able to find solutions. The governments found it difficult to implement social mobilization since they were not convinced about its potential. The social science aspects needed to be strengthened further. The COMBI approach had been

successfully introduced in leprosy, TB and lymphatic filariasis control programmes. How the existing programmes on health education could be linked to achieving behaviour impact was an important issue. The new "mantra" for social marketing was to identify and define behaviour objectives.

- The direct and indirect economic costs as a result of malaria needed to be worked out and used for advocacy for the programme. Roll Back Malaria should be a people's movement as enunciated in 1998.

10. INSTITUTIONAL NETWORKING – EXAMPLE OF THE ASIAN COLLABORATIVE TRAINING NETWORK ON MALARIA (ACTMALARIA) AND THE ENVIRONMENTAL HEALTH PROJECT (EHP) IN NEPAL

Dr Panduka Wijayratne, Sri Lanka, stressed the need for intercountry networking and training for capacity development. He related the persistence of malaria to socioeconomic development, increased migration, conflict, urbanization and natural disasters. The constraints were inadequate information sharing, inadequate health care delivery, especially across borders, and lack of coordination in the control strategies. Technically, there were differences in case definitions, surveillance, prevention messages, and varied use of insecticides and different treatment schedules. Sustained efforts were needed to establish networks. These include SEAMEO TROPMED, Asian Collaborative Training Network for Malaria (ACTMalaria), Mekong Roll Back Malaria, Bangladesh, Bhutan, India and Nepal (BBIN) network and others. There were only a few training courses to develop the capacity while many more were needed for scaling up efforts to be successful. Dr Panduka summarized the developments regarding the Environmental Health Project (EHP) in BBIN countries. These included a review of the progress achieved in the control of malaria, kala azar, and Japanese encephalitis. For cross-border work it was important to have a focal person in WHO with budgetary support to promote and advocate cross-border collaboration. He recommended focused activities supported by funds to achieve the expected results. The ACTMalaria needed to be extended to South Asian countries. Dr Panduka identified the existing strengths for capacity development in countries of the Region. GFATM could contribute substantially to capacity development in countries of the Region, he said. It may be important to consider development

of intercountry collaborative proposals for GFATM funding. This may be considered for the fifth round and RTAG could facilitate this effort, he added.

Discussion points

- Ad hoc training was not very useful. It should be institutionalized and made a life-long learning objective. Basic and advanced courses on tropical medicine were being offered for the last 14 years by SEAMEO TROPMED. The course was rotating and the fees charged helped to pay for some of the students. More than 1300 participants had been trained since the inception of the course. The existing training programmes needed to be evaluated. There was also a need to follow up the training efforts. WHO Collaborating Centres had a clear role in capacity development. It was important to ensure the sustainability of the training network established with WHO assistance.
- The South Asia Network (SAARC) mechanism for capacity building should be explored and should be backed up by political commitment.
- Networks for drug resistance had been established and were functioning. The network in East Africa had been functioning well. However, the networks had to be sustained.

11. CHANGING PATTERNS OF VECTORS IN THE SOUTH-EAST ASIA REGION

Dr Pushpa Herath, Sri Lanka, summarized the changing pattern of malaria vectors in the Region. These were related to eco-environmental changes and socio-behavioural factors. There was a multiplicity of factors responsible for the changes. Climate, ecological changes, deforestation, sustained agriculture and other environmental factors were responsible for vector distribution and their stability. The vector distribution was large in India and Thailand and could, at least, be partly attributed to the intensity of the investigation. IRS had affected the vectors, their distribution and behaviour. The impact of the changes had been positive, negative or mixed and had led to a change in the incidence of malaria and the distribution of *P falciprum* and *P vivax* in Member countries. Population migration and the gem mining industry had produced a negative impact. Insecticide resistance information was inadequate in the Region and needed to be intensified.

Dr Herath explained that when the vector developed resistance to one insecticide it could develop resistance to others also depending on the resistant mechanism(s) involved. A large variety of insecticides were being used by public health authorities, by private industry in the health as well as outside the health sector in many countries. This could lead to development of resistance and/or multiple resistance in vectors. Presently, the possibility of cross-resistance to pyrethroids was a matter of great concern. This needed to be addressed urgently. If rotation of insecticides was the strategy adopted in some countries to delay or avoid development of resistance, then avoiding the use of related insecticides was critical. Indiscriminate use of insecticides should be controlled. One of the approaches for rational use of insecticides was by adopting the integrated vector management (IVM) approach.

Discussion points

The changes in vector response to insecticides, their distribution and role in malaria transmission were taking place as a result of the changes in eco-environments, as well as the increased use of insecticides in public health and in agriculture. These were not being adequately investigated or documented. There was a need to initiate a dialogue with agricultural entomologists. A way forward may be to form national multidisciplinary entomological societies. A great deal of entomology information was available but was not consolidated, documented and published to support evidence-based decision making and policy development. An evidence-based insecticide policy for public health should be developed for each country with WHO support.

12. BRAINSTORMING SESSION ON INTEGRATED VECTOR MANAGEMENT (IVM) AND HEALTHY PUBLIC POLICY

Dr Chusak Prasittisuk, Regional Adviser, VBC, WHO/SEARO, provided an update on IVM and summarized the developments in this area. In 1997, the World Health Assembly had adopted a resolution to reduce the reliance on insecticide use through an integrated approach. This was followed by an international persistent organic pesticides (POPs) convention in 2000 to ban the use of DDT. WHO/SEARO had organized international courses on comprehensive vector management in VCRC Pondicherry, India and Salatiga, Indonesia. The modules for this international course were developed by WHO/ Hq. The global strategic framework for IVM was finalized in 2004 and was focussed on efficacy, cost effectiveness, ecological soundness and

sustainability. This was a joint responsibility of the stakeholders including the private sector. It recognized the strengths and weaknesses of the currently available/used vector control measures. It aimed to reduce the transmission of vector-borne diseases, by *selective use* of a range of interventions, based on the local epidemiology, knowledge on vector bionomics, the environment of transmission, etc. IVM implementation entailed collaboration between various sectors. The local community had to be engaged and the regulatory processes invoked. There was a need to adopt a comprehensive public health approach to reduce the transmission of vector-borne diseases in IVM. The evidence base had to be assessed periodically to ensure its validity and relevance. IVM was designed to be an integral part of the district health system. Consequently, health facilities could be responsible for implementation of IVM. These had to be supported by community-based alliances which should have the maximum stake in vector control interventions. In IVM, the private sector had a major role, especially in urban areas. Private sector participation and its regulation was an important component of IVM. In certain situations, outsourcing could be a strategy adopted for IVM. This could be successful if technical guidance was provided to ensure quality. Developmental projects and their health impact assessment was important to determine the success of IVM. While health impact assessment of mega projects had been built into the national policy, small and mid-size projects were often ignored and could be responsible for the bulk of the problem.

Dr Chusak said that funding for IVM should come from multiple sources since all of them had a stake. WHO would have to work with organizations like UNDP, UNEP and FAO in the implementation of IVM. Parallel organizations at the country level had to be involved. A step-by-step approach was required for the implementation of IVM. Proposals were being developed to start activities. The objective of IVM was not only to control the disease but also to ensure environmental protection through the involvement of the community and the district health systems. Summarizing the role of WHO, he said it included developing strategic plans, partnerships with international organizations, endorsing the strategy of IVM approach, assisting with IVM capacity development and documenting the experiences with IVM strategies in the countries.

Discussion points

- The subject of IVM was proposed to be discussed at the meeting of parliamentarians as part of healthy public policy. While action and

planning was required at the local level, the "umbrella" had to be provided by the national government. There was a need to prioritize vector management since the portfolio had grown. In this context, cost considerations and the adverse impact of the use of insecticides became crucial. In addition to the policy issues there were important managerial actions that needed consideration. IVM provided an opportunity to give a practical shape to the strategy of social mobilization. Changes in the environment were resulting in the proliferation of *An stephensi* in rural areas. The *An culicifacies* population, on the other hand, was declining. The change in the vector population was resulting in a reduction in malaria incidence in India and Pakistan (Punjab State).

- Sustained control of malaria in the countries was possible with good environmental management backed by a healthy public policy encompassing IVM as one of its important components.

13. REVIEW OF THE REGIONAL STRATEGIC PLAN FOR MALARIA

Dr Mannan Bangali, WHO Bangladesh, reviewed the regional strategic plan to roll back malaria in the South-East Asia Region. The mission, targets and objectives of the regional strategic plan were consistent with the RBM strategy. It was not certain whether the situation of malaria was getting better, worse or was stable. There was a concern about the increase in *P falciparum* and drug resistance. The malaria situation in the Region was complicated due to several eco-epidemiologic subtypes, focal epidemics and outbreaks, and the high cost of drugs, insecticides and development of vector resistance to insecticides. The countries were facing tremendous resource constraints. The regional strategy on malaria should be vigorously pursued to achieve the goals of malaria control. The plan should be adapted in the countries. In principle, the regional strategic plan was informally approved by malaria programme managers during several meetings. In the next few weeks, the members would provide feedback for its revision, if any, so that it could be shared with the countries and the partners.

14. GROUP WORK

The participants were divided into two groups. The terms of reference for each group were shared with the participants in the plenary. The allocation of

the participants to the groups and the terms of reference for group work are given in Annex 3. Group I selected Dr Faiz as chairperson and Dr L. Ortega as rapporteur. Group 2 selected Dr V.P. Sharma as chairperson and Dr W. Tun Lin as rapporteur. The groups made their presentations in the plenary session. The following were the highlights of the discussions:

Discussion points – group work

- Malaria had adverse socioeconomic and developmental implications. Its diagnosis and treatment should be endorsed as a public good. It should be made affordable, accessible, effective and equitable.
- There should be clear articulation in health policy on malaria, recognizing that the disease adversely impacts socioeconomic development and vulnerable groups. SEARO should provide guidance and technical support to countries in implementing GFATM. Resource intensive support was required. This was to be built into the reprogramming of GFATM. If there were difficulties in reprogramming, additional funds would need to be mobilized from other sources in support of WHO in GFATM implementation.
- In Africa, in high malaria transmission areas, clinical diagnosis was the hallmark while in the low and moderate risk areas, clinical diagnosis would be considered in situations where there were difficulties in establishing a laboratory diagnosis. This approach should be considered for the South-East Asia Region because of difficulties in access to population in remote areas.
- To increase coverage, malaria diagnosis and treatment should be available in the public and private sectors. The private sector should also be regulated and follow the set policy.
- The role of intermittent preventive treatment (IPT) in low and moderate transmission areas was not clear and there was insufficient evidence. There was no experience in IPT in the Region. There were two parasite species and a more prominent problem of drug resistance, compared to Africa. There was concern about resistance of SP which was currently recommended for IPT in Africa. Therefore, IPT had not been recommended in the South-East Asia Region. There was a need to study IPT in countries of the Region.

- Drug resistance in *P vivax* should be studied in countries of the Region where this was the predominant problem. The drug regimen should be altered when the treatment failure exceeds 10% as recommended by WHO in 2004.
- The real incidence of malaria was unknown. The reported incidence reflected the trends and not the incidence of the disease. Countries should strengthen their health management information system to obtain actual incidence and distribution of malaria for better targeting and planning.
- The group was informed that the regional protocols for household and health facility surveys were available. The control programme should apply the tools in investigating the burden of disease.
- Monitoring and evaluation of the malaria control programme should be intensified, especially in countries where the programme was being scaled up. Input, process, output, outcome and impact indicators should not be ignored.
- IVM was applicable to all vector-borne diseases and there was a need to apply IVM in the management of other vector-borne diseases such as dengue fever, Japanese encephalitis, lymphatic filariasis and kala-azar. These also had an effect on health and other sectors. Therefore, this subject was of national importance.

15. RECOMMENDATIONS

(1) WHO should provide technical support to the Member countries in the development and strengthening of healthy public policy that promotes equity in health and includes malaria control as the foundation for equity in health.

(2) WHO should encourage Member countries to take steps in public health, enhancing tools for malaria control e.g. ITNs/LLINs and the first-line antimalarials as essential public goods and, as such, these should be exempted from taxation. Commitment by countries in this regard will facilitate scaling-up community protection against mosquito bites as well as provision of early diagnosis and effective treatment.

(3) WHO should provide technical guidelines and support to the Member countries in the implementation of IVM and in expanding access to diagnosis and effective treatment of malaria.

(4) Member countries should be supported to mobilize additional resources to expand and improve the quality of malaria diagnosis either by microscopy or by rapid diagnostic test. In the interim, in areas where malaria diagnosis by either microscopy or RDT was not readily available, clinical diagnosis of malaria needs to be improved. Member countries should be supported to adopt standard case definition of malaria and to develop clinical algorithm for malaria diagnosis that takes into account the epidemiological risk.

(5) Member countries should be supported in strengthening and sustaining national capacity for malaria microscopy and in implementing a quality assurance system. As an initial step, SEARO should promote the conduct of situation analysis on the current status of malaria microscopy services in Member countries. It should advocate and support the establishment of regional and national centres for quality assurance of RDTs.

(6) SEARO should promote, in Member countries, access to early diagnosis and appropriate treatment of malaria as early as possible, preferably within 24 hours, as a basic right of the patients suspected of having malaria. Antimalarial drugs should be considered public goods and provided free of charge in the public sector.

(7) Member countries should be discouraged from implementing presumptive, single-dose and incomplete treatment with CQ. If a patient is suspected of having malaria which cannot be immediately confirmed, full treatment with recommended drugs should be given.

(8) SEARO should advocate to national health authorities the urgent need to review their national antimalarial treatment policies vis-à-vis the status of drug resistance / therapeutic efficacy of antimalarial drugs in their respective countries. It was strongly recommended by WHO/HQ in 2004 that if treatment failure to a particular drug regimen was above 10%, the drug policy should be changed accordingly. ACT was strongly recommended. Artemisinin derivatives should not be used as monotherapy. CQ can be used but only if it was proven to be effective.

(9) SEARO should provide Member countries with generic guidelines on changing the antimalarial drug policy, and treatment guidelines to be adapted to the country setting. In countries where technical expertise

was limited, WHO should facilitate the provision of technical support for policy development, treatment guidelines, and for development of training materials and job aids for early diagnosis and appropriate treatment.

(10) SEARO should encourage Member countries to collate published and unpublished information on *P vivax* in the Region, and convene a small group of experts to review the current state of knowledge, to identify gaps, and to recommend areas for research and policy, if applicable. It should encourage and mobilize support for the conduct of studies on *P vivax*, including research on alternative treatment regimens.

(11) SEARO should promote the standard three-day regimen of chloroquine and 14-day regimen of primaquine for treatment of *P vivax*.

(12) SEARO should explore various mechanisms for intercountry and bi-regional (with WPRO) collaboration to:

- strengthen national and regional capacities to combat fake/counterfeit drugs and drug resistance.
- disseminate information and influence policy.

(13) SEARO should advocate to Member countries and support the development of an intercountry proposal to GFATM. The proposal should focus on collaborative activities to address issues on drug resistance, fake/counterfeit drugs as well as quality assurance of diagnostics. SEAMEO-TROPMED should be considered as the focal agency for development of the proposal. Subject to the concurrence of country cooperating mechanism (CCM) of Member countries, it shall act as the Principal Recipient. WHO should support Member countries in reviewing their approved GFATM grant for possible re-programming to address these issues.

(14) Steps should be taken to highlight to Member countries and donor agencies the importance of early diagnosis and appropriate treatment of malaria within 24 hours of onset of fever to prevent complications and deaths. Particular attention should be given to areas where multi-drug resistance was a problem and morbidity and mortality were high.

(15) Member countries should be supported in improving capacity of peripheral hospitals to manage severe malaria. Support should be

provided through training materials, technical experts, networking of training institutions, and mobilization of financial resources for essential drugs and diagnostics.

(16) WHO should fast-track research on the artesunate rectal suppository, facilitate and promote its registration and rational use in Member countries at the periphery for pre-referral treatment of severe malaria. Research should be encouraged on the feasibility and outcomes of allowing peripheral health care providers in remote areas to provide parenteral drugs or rectal artesunate before referral of severe malaria cases.

(17) Research gaps on malaria in pregnancy should be identified and research to address the gaps encouraged.

(18) Member countries should be supported in developing guidelines for prevention and treatment of malaria in pregnancy that were in accordance with best practices applicable in the Region. Intermittent preventive treatment (IPT) of malaria in pregnancy, recommended by WHO in high transmission areas in Africa, was not yet recommended in the South-East Asia Region due to lack of a suitable drug. Sulfadoxine-pyrimethamine, which was currently the only recommended drug for IPT, was no longer effective for *P falciparum* in several countries in the Region. There was a need to study IPT in countries of the Region.

(19) Technical support should be provided to further improve routine health information systems and assist the countries in household and health facility surveys that will meet the needs for information on the burden of malaria in Member countries.

(20) Member countries should be provided with tools and technical guidance in empowering the people to prevent and to treat malaria at the community level. Member countries should be encouraged to invest in:

- Identification of behaviour objectives;
- Development of appropriate IEC strategies and materials directed towards the attainment of well-defined, desirable behaviours on early diagnosis and appropriate treatment of malaria; and
- Building capacities of national and local staff to help empower communities to address the malaria problem.

(21) Lessons learnt should be documented on social mobilization to control malaria and shared with Member countries.

(22) The development of "Healthy Public Policy" should be actively promoted in Member countries. Such a policy:

- enables effective regulation to combat fake and substandard antimalarial drugs;
- provides an enabling environment and an even playing field for the manufacture, importation and distribution of quality assured and affordable antimalarial drugs and rapid diagnostic tests;
- enables effective regulation on the use of insecticides intended exclusively for public health, avoiding the use of those developed for agricultural purposes;
- mandates the inclusion of malaria control in the design and implementation of development projects (including small and medium projects) in endemic or malaria-receptive areas;
- ensures the inclusion of IEC on malaria in the curriculum in primary and secondary schools;
- addresses inequity in health care and ensures political commitment at all levels and sustainable financing of malaria control programmes; and
- promotes the malaria control programme as an integral part of the overall socioeconomic development plan of Member countries and secures political commitment.

(23) As part of "Healthy Public Policy", the early recognition and control of malaria outbreaks, and transparent and timely sharing of information to neighbouring countries and WHO should be promoted. Prompt sharing of information across international borders in the event of an outbreak was recommended as a part of intercountry cooperation.

(24) Member countries should be supported in early detection and control of malaria outbreaks, and promote transparent reporting within the country.

Microscopy was recommended to confirm malaria in case of an outbreak. Quality-assured rapid diagnostic test (RDT) should be used in the absence of reliable microscopy. Artemisinin-based combination

therapy (ACT) should be used if the outbreak was due to *P falciparum* or mixed infections and CQ if it was due to *P vivax* only.

(25) Adherence to treatment should be promoted by encouraging the use of pre-packaged, preferably co-formulated ACTs, appropriate IEC targeted to patients and/or caregivers and training of health care providers on patient counselling.

(26) Member countries should be supported in the development of healthy public policy. This can be enhanced by the inclusion of vector-borne diseases prevention and control through the adoption of IVM strategy in keeping with the local epidemiological, environmental, social and cultural considerations.

(27) Member countries should be encouraged to consider IVM as public health goods.

(28) Necessary technical assistance should be provided to Member countries for effective implementation and scaling up of IVM.

(29) Full support should be provided to Member countries in the development of regional/national IVM strategy with emphasis on capacity building, behaviour change communication, research and development and networking.

Annex 1

LIST OF PARTICIPANTS

Dr P.R. Arbani (Chairman)
Ex-Regional Adviser, MAL/SEARO
Jakarta
Indonesia
E-mail: Pr_arbani2000@yahoo.com

Dr (Ms) Emiliana Tjitra
National Institute for Health Research and Development
Ministry of Health, Jakarta Pusat 10560
Indonesia
Tel: + 62 21 426 1088; Fax: +62 21 424 5386
E-mail: emil@jakarta.wasantara.net.id; emil@litbang.depkes.go.id.

Dr (Ms.) Pushpa Herath
WHO retiree-Entomologist
18, Ayurvedha Road, Pallekele
Kundasale, Kandy
Sri Lanka
Tel + 94 81 2420876
E-mail: pusherath@yahoo.co.in

Dr Panduka M. Wijeyaratne (Co chairman)
Former resident advisor of EHP project based in Nepal
Colombo
Srilanka
E-mail: PANDU_WIJ@YAHOO.COM

Dr Manas Kumar Banerjee
Division of Epidemiology and Disease Control
Ministry of Health
Kathmandu
Nepal
E-mail: banerjeem@htp.com.np

Prof M. Abul Faiz
Professor of Medicine
Department of Medicine,
Dhaka Medical College
Dhaka 1000
Bangladesh
Tel: + 88 02 8616780; Fax: + 88 031 610029
Email: mrg@spnetctg.com; mafaiz@dbn-bd.net

Dr Willoughby Tun Lin
Director, National Poison Control Centre
Department of Medical Research
(Lower Myanmar)
Yangon
Myanmar
Tel: 951-251508 to 251510
E-mail: 30thstreetclinic@mptmail.net.mm; wtunlin@mptmail.net.mm

Prof. Sornchai Looareesuwan
Secretary General, SEAMEO TROPMED
Faculty of Tropical Medicine, Mahidol University
420/6 Rajvithee Road, Ratchathewi
Bangkok 10400
Thailand
Tel: +66-2-247-1688, Fax: +66-2-245-7288
E-mail: tmslr@mahidol.ac.th

Prof Pratap Singhasivanond
Dean, Faculty of Tropical Medicine
Mahidol University, 420/6 Rajvithee Road
Ratchathewi
Bangkok 10400
Thailand
Tel: +66-2-246-0056, 246-9000x682
Fax: +66-2-245-7288
E-mail: tmpsh@mahidol.ac.th

Dr (Ms) Valaikanya Plasai (Rapporteur)
The College of Public Health
Chulalongkorn University
Pathumwan, Bangkok 10330
Thailand
Tel: 662 218 8199, Fax 662 218 8199
E-mail: valaikanya@cph.chula.ac.th

Dr (Ms) Neena Valecha
Malaria Research Centre
22 Sham Nath Marg
Delhi – 110 054
India
Tel: 91-11-239 43743, Fax: 91-11-23943743
Mobile: 9111-981-0162168
E-mail: walicha@vsnl.com

Dr V.P. Sharma
Former Director
Malaria Research Centre
C5/10 (GF), Vasant Kunj
New Delhi-110070
India
Mobile: 98-107-06-411
Phone: 26138674
Email: vinodpsharma@gmail.com

Dr Rajpal S Yadav
Deputy Director & Officer-in-charge
Malaria Research Centre (ICMR)
Civil Hospital
Nadiad, Gujarat
India
Tel: 0268-2520280
Fax: 0268-2521808
E-mail: rajpal_yadav@yahoo.com

Temporary Advisers

Dr Vijay Kumar
Ex-Director, CDS
WHO/SEARO

WHO Secretariat

WHO Country Focal Persons for Malaria

Dr Steven Bjorge
TO-MAL&VBC
Indonesia

Dr Mannan Bangali
NPO
Bangladesh

Dr Ravi Kumar
NPO
India

Dr Leonard Ortega
STP-MAL
Myanmar

WHO Headquarters

Dr Kamini Mendis
RBM Department

SEARO

Dr Chusak Prasittisuk
RA VBC

Dr Krongthong Thimasarn
Ag. RA-MAL

Ms Rekha Anand
Sr. Secretary, MAL

Mr Shibu Varghese,
Secretary, VBC

Annex 2

PROGRAMME

15 December 2004

08.30 -09.00 hrs	Registration	
09.00-09.30 hrs	Opening Ceremony	
	– Inaugural Address of the Regional Director	Read by Dr Abdullah, Ag CDS
	– Self Introduction of participants	
	– Appointment of Chairman, Co-chairman and Rapporteur	Ag CDS
	– Administrative announcements	Dr Krongthong Thimasarn, Ag. RA-MAL
	– Group Photograph	
Review of malaria situation at global level, regional level		
10.00-10.30 hrs	– Review of Global malaria situation and progress in Implementation of RBM	Dr Kamini Mendis, HQ
	– Lessons learned from other WHO Regions	
10.30-11.00 hrs	– Review of malaria situation in SEAR	Dr Krongthong Thimasarn, Ag. RA-MAL
11.00-11.30 hrs	Discussion	
Technology for malaria control: Update technology, experience in the Region and constraints		
11.30-12.00 hrs	– Malaria Diagnosis and Quality Control	Dr Tjitra and Dr Bjorge
	– Update on malaria vaccines	
12.00-12.45 hrs	Drug resistance, new drugs and combination therapy	Dr Neena Valecha, Dr Tjitra and Dr Ortega
13.45-14.30 hrs	Clinical management of malaria	Prof Sornchai and Prof Faiz

14.30-14.50 hrs	Antimalaria Drug Quality Control – Experience from Mekong RBM	Dr Krongthong Thimasarn
14.50-15.20 hrs	Malaria Information system and application of GIS in malaria control and Epidemics preparedness	Prof Pratap Singhasivanon
15.30-16.00 hrs	New concept on social mobilization and training methodology	Dr Valaikanya Plasai
16.00-16.30 hrs	Existing training institutes and possibility of networking: experience from EHP project and ACTMalaria	Dr Panduka M. Wijeyaratne
16.30-17.30 hrs	General discussion	

Meeting of moderators for brain storming session

16 December 2004

Technology for malaria control (Continue)

08.00-08.30 hrs	Changing patterns of malaria vectors in SEAR	Dr Pushpa Herath
08.30-09.30 hrs	Brainstorming session	
	Integrated vector management (IVM) Practical implications: – Role of IVM in Healthy Public Policy – How to apply IVM in SEAR	Dr K Mendis, Dr Chusak Prasittisuk and Dr Pushpa Herath as moderators
09.30-10.00 hrs	Regional Strategic Framework to roll back malaria in SEAR	Dr Mannan Bangali
10.30-12.30 hrs	**Group work (2 groups)** (to review progress of countries in applying new technology, gaps and practical recommendations, including research needs)	
	Group 1 Diagnosis and treatment **Group 2** Vector management **Cross-cutting issues for both groups:** Social mobilization and human resource development	(Participants will work in 2 groups. Core issues to be discussed will be provided)
13.30-15.00 hrs	**Group work** (continued)	
15.30-17.30 hrs	**Group work** (continued)	
17.30-18.00 hrs	Review Meeting of WHO Secretariat	

17 December 2004 Group work continue

08.30-10.00 hrs	Group work and preparation for presentation	
10.30-12.30 hrs	Presentation of Group 1-2	
	Discussion	
13.30-14.30 hrs	Synthesis of recommendations and road maps for 2005-2007	Chairman and Rapporteur of 2 groups
14.30-15.00 hrs	Presentation of recommendations and road maps	
	General Discussion	
15.00-15.30 hrs	**Conclusions and Recommendations**	Chairman and Rapporteur
15.30-16.00 hrs	Closing session	

Annex 3

LIST OF MEMBERS FOR GROUP WORK

Group 1 – Diagnosis and treatment	**Group 2 – Integrated Vector Management**
Dr Emiliana Tjitra	Dr P.R. Arbani
Dr M Abul Faiz	Dr Pushpa Herath
Dr Sornchai Looareesuwan	Dr Willoughby Tun Lin
Dr Neena Valecha	Dr Pratap Singhasivanon
Dr Steven Bjorge	Dr V.P. Sharma
Dr Leonard Ortega	Dr Rajpal S Yadav
Dr Krongthong Thimasarn	Dr Kamini Mendis
Dr Vijay Kumar	Dr Panduka M Wijeyaratne
Dr M.K. Banerjee	Dr Chusak Prasittisuk
Dr Mannan Bangali	Dr Ravi Kumar

Terms of reference for group work

Group 1 – Diagnosis and Treatment

- Diagnosis of malaria by microscopy, RDT, role of case definition
- Strengthening microscopy QA system
- Establishment of quality assurance in diagnosis and treatment
- Monitoring of drug resistance, national and regional networking of monitoring sites and information sharing
- Treatment of malaria based on drug resistance studies, type of malaria, national policy, availability of drugs and cost effectiveness
- Policy on antimalarials
- Strategies to enhance access to diagnosis

- Establishment of a system to monitor the quality of antimalarials
- Diagnosis and treatment of malaria in outbreak and epidemic situations
- Research issues on diagnosis and treatment of malaria

Group 2 – Integrated Vector Management

- Issues relating to entomology capacity development
- Monitoring of vectors, distribution, bionomics
- Operationalization of ITNs
- Recommendations of IRS (if any)
- Policy issues related to ITNs-LLINs, the need for stratification and the desirable coverage for public health impact
- The IVM strategy and recommendations for promoting and implementing IVM in the SEA Region
- How to link IVM to healthy public policy
- Intersectoral collaboration, the role of environment, developmental projects, agricultural sector
- Policy issues relating to IVM
- Research needs in vector management
- Role of network on transmission risk reduction in control of vector borne diseases
- Lessons learnt from successful experiences in integrated vector management.

Cross-cutting issues for both groups

- Socio-cultural issues including innovative approaches in social mobilization for EDPT in malaria control
- Enhancing vector control including IVM through effective community mobilization including intercountry implications

- COMBI and its relevance to malaria control
- Needs identification in human resource development for malaria control and roles of institutions and networks in the Region e.g. ACTMalaria, WHO CC and others
- Development of standards, tools and guidelines, modules that were consistent with the national policy
- Facilitating the sharing of information in and between countries
- Cross-border and intercountry issues and sustained intercountry collaboration /networking
- Research on social mobilization, needs identification, participatory research, adoption of social marketing and other relevant approaches that enlist community participation including cross-border issues.