Regional Consultation on Integrated Approach to Malaria Control

Colombo, Sri Lanka, 26-29 October 2009
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<th>Abbreviation</th>
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<tr>
<td>ACT</td>
<td>artemisinin-based combination therapy</td>
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<td>ACTMalaria</td>
<td>Asian Collaborative Training Network for Malaria</td>
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<td>API</td>
<td>annual parasite incidence</td>
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<td>APMEN</td>
<td>Asia-Pacific Malaria Elimination Network</td>
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<td>AU SAID</td>
<td>Australian Agency for International Development</td>
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<td>GFATM</td>
<td>Global Fund to fight AIDS, TB and Malaria</td>
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<td>GMI</td>
<td>global malaria indicators</td>
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<td>GMP</td>
<td>Global Malaria Programme</td>
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<td>HMIS</td>
<td>health management information system</td>
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<td>HQ</td>
<td>headquarters</td>
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<td>IRS</td>
<td>indoor residual spraying</td>
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<td>ITN</td>
<td>insecticide-treated net</td>
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<td>integrated pest vector management</td>
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<td>IVM</td>
<td>integrated vector management</td>
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<td>LLIN</td>
<td>long-lasting insecticidal net</td>
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<td>RBM</td>
<td>Roll Back Malaria</td>
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<td>RDT</td>
<td>rapid diagnostic test</td>
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<td>RMCS</td>
<td>Revised Malaria Control Strategy</td>
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<td>RO</td>
<td>Regional Office</td>
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<td>Acronym</td>
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<td>M&amp;E</td>
<td>monitoring and evaluation</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>NEHAP</td>
<td>national environment and health action plans</td>
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<td>SEARO</td>
<td>Regional Office for South-East Asia</td>
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<td>SME</td>
<td>surveillance, monitoring and evaluation</td>
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<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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<td>WHOPES</td>
<td>WHO Pesticide Evaluation Scheme</td>
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<td>Regional Office for the Western Pacific</td>
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Executive summary

The World Health Organization’s (WHO) Regional Office for South-East Asia (SEA) organized a consultation during 26-29 October 2009 to review achievements and challenges in implementation of the Revised Malaria Control Strategy, South-East Asia Region 2006-2010, identify activities using an integrated approach and to strengthen partnership for malaria control in the Region. The consultation included technical presentations, poster session, group work, panel discussions and a field visit to observe implementation of integrated pest vector management. The consultation was attended by officers in charge of malaria control programmes from all Member States, development partners and donors. Besides participants from the health sector, there were several officials from the non-health sector, i.e. agriculture, environment, labour, etc.

The participants reviewed and discussed several issues that required an intersectoral approach. These included integrated vector management, environmental issues related to malaria including climate change, and strengthening partnership for malaria control. Lessons learnt and best practices in intersectoral approach were shared. Practical recommendations were made to WHO and to Member States to further scale-up key interventions through closer collaboration with other sectors and partners/donors.
1. Background

Malaria is one of the priority communicable diseases. The complexity and diversity of malaria epidemiology in the South-East Asia Region (SEAR) makes it different from malaria in Africa. The success of malaria control is based on a good understanding of malaria epidemiology and its dynamics. The strategy for malaria control in SEAR during 2006-2010 was revised and adopted by the Sixtieth session of the Regional Committee in 2006. The Revised Malaria Control Strategy (RMCS) included the following five broad strategies:

(1) Reform approaches to programme planning and management;
(2) Revamp surveillance and strengthen monitoring and evaluation;
(3) Target interventions to risk groups;
(4) Scale-up control of vivax malaria; and
(5) Increase coverage and proper use of insecticide-treated mosquito nets.

Following the adoption of RMCS in 2006, an inter-country meeting on implementation of RMCS was held during 12-14 February 2007 to discuss the elements of the RMCS with malaria programme managers, other related non-health sectors, NGOs and partners. During the past two years, Member States, partners and WHO have collaborated in advocacy efforts for malaria control through several forums. More resources for malaria were made available especially through GFATM. Significant progress in the malaria situation was observed during 2006-2008. Several countries have reported declining trends in malaria morbidity and mortality while some countries are working towards malaria elimination. However the malaria burden in the Region remains high and coverage of key interventions remains low due to several reasons. There is a need to continuously advocate for malaria control, for more resources and for broadening the involvement of the non-health sector, the private sector, NGOs and the community, etc in malaria control.

The concept of an integrated approach has been introduced for control of diseases including malaria as well as vector-borne diseases.
In view of the rapidly changing scenarios of malaria epidemiology especially due to environmental and socioeconomic factors, the change in health systems and the increasing roles of partners it is timely to review the current epidemiological situation of malaria at country level. The progress in implementation of the RMCS and current roles of all sectors in relation to malaria control and elimination also need to be reviewed.

The consultation on malaria organized during 26-29 October 2009 in Colombo, Sri Lanka demonstrated significant progress in malaria control and implementation of an integrated approach in malaria and vector-borne disease control with full participation from communities and the non-health sector. The meeting provided a forum for malaria programme officers to identify their needs to donors and partners. It was a forum that focused exclusively on environmental changes including climate change that impact the malaria situation. It was also a forum for the malaria control programme to establish partnership with other non-health sectors, NGOs and other UN agencies.

2. Objectives of the consultation

2.1 General objective

To strengthen malaria control programmes in the South-East Asia Region through an integrated approach.

2.2 Specific objectives

(1) To review achievements and challenges in implementation of the Revised Malaria Control Strategy of SEAR 2006-2010;

(2) To review effectiveness of contribution of partners/donors on malaria control in Member States;

(3) To identify specific interventions/activities using an integrated approach to malaria control in SEAR; and

(4) To identify a mechanism to strengthen the partnership and networking for malaria control programmes in SEAR.
Mr Nimal Siripala de Silva, Hon. Minister of Healthcare & Nutrition opened the meeting. Dr S Deniyage (Sri Lanka) and Dr Wichai Satimai (Thailand) were nominated as the Chair and Co-chair, respectively. Dr Karma Lhazeen (Bhutan) was nominated as the rapporteur.

3. Technical sessions

3.1 Review of malaria situation at global and regional level

Global malaria situation

Dr Robert Newman presented the global malaria situation. He reported that in several African countries a reduction of malaria incidence and deaths and a significant increase in coverage of key interventions were observed. This included insecticide-treated nets (ITN/LLINs) and indoor residual spraying (IRS), artemisinin-based combination therapy (ACT) and intermittent preventive treatment in pregnant women (IPTp). Several countries in Africa have achieved malaria targets of the Millennium Development Goals (MDG 6). There is tremendous improvement in the malaria mortality rate among children and this contributed to overall child mortality (MDG 4) and maternal health (MDG 5). According to the World Malaria Report 2008, 25 countries outside Africa have shown a reduction in malaria incidence and several countries are moving towards malaria elimination. Funding for malaria control increased enormously during 2006-2007.

However, the actual burden of malaria is still not known and this causes difficulty in measuring the impact of malaria control. Malaria is under-reported where private sector reporting is lacking or is inadequate in most countries. Malaria is over-reported when clinically suspected cases are reported as malaria. Knowing the actual burden of the disease is important for planning logistics and resource mobilization. It is hoped that the enormous increase in global financial resources for malaria control during the past seven years provided an opportunity to strengthen the health system including improving antenatal care service, case management, health system and the EPI programme.
The challenges beyond 2010 include three key issues: (1) efforts to fill the gaps of unfinished agenda (diagnosis, access to effective treatment, achieving universal coverage of LLINs, strengthening malaria surveillance); (2) mitigating threats to success in drug and insecticide resistance, quality of drugs, diagnosis and service; and (3) developing capacity in programme management. One of the threats that related to SEAR is the emergence of artemisinin resistance at the Thai-Cambodia border which is now being confined through the concerted efforts of Member States, partners and WHO. Though funding for malaria control increased in SEAR the Region remained underfunded due to large size of population.

**Western Pacific Region**

There was a significant decrease in reported deaths (40%) and confirmed cases (15%) in WPR during 2003-2007. Member States made good progress in implementing malaria policies and strategies. ACT is being implemented in eight out of 10 falciparum-affected countries whereas chloroquine and primaquine are part of national treatment policy for vivax in most countries but primaquine is not used as antirelapse therapy in at least five out of six countries. ACT is used for treatment of vivax malaria in three countries. In addition to ITN/LLIN, long-lasting insecticide-treated hammock nets is an additional strategy for mobile populations in Mekong countries. There is no policy on malaria in pregnancy and integrated vector management (IVM). Key issues and challenges included the possibility of insecticide resistance, low coverage of malaria prevention among population at risk, unclear preference of net materials (polyethylene VS polyester), irrational use of drugs through presumptive treatment and expanding quality control of RDTs, counterfeit drugs and treatment of vivax malaria. Similar to SEAR, artemisinin resistance is a key issue in WPR. Several countries are moving towards malaria elimination, i.e. China, Viet Nam, Philippines, the Republic of Korea, etc. The new initiative is to develop the Mekong Malaria M & E Framework — and from control to elimination.

In terms of funding, WPR countries have the greatest reliance (of all regions) on external funding (GFATM is a principal source).

**South-East Asia Region**

It was estimated that 1.3 billion (76%) of the total population in the SEA Region is at risk of malaria. The population at risk ranges from 30% to 100% with some countries showing no change in the population at risk over the
years. In 2008, 2.5 million malaria cases and 3100 malaria deaths were reported in the Region. A decline in reported malaria cases was observed in most countries during 2001-2008, except there was a slight increase in reported cases in Bangladesh and India in 2008. Malaria mortality continued to decrease gradually during the past decade. Except in Sri Lanka where \( P. \) falciparum proportion was very low and DPR Korea where \( P. \) falciparum does not exist. \( P. \) falciparum proportion was relatively high in most countries and was rising in Bangladesh and India. It was estimated that malaria was grossly under-reported, i.e., actual cases might vary between 30-160 million whereas actual deaths would be approximately 100 000 to 120 000. However, several countries continued to report clinical (unconfirmed) cases. This would have led to over-reporting of malaria in some countries leading to overestimation of the disease burden. The management of fever cases with anti-malarial drugs would have led to over treatment and unnecessary wastage of resources in already resource-constrained situations and also increasing the risk of drug resistance in the populations due to irrational use of anti-malarials.

Progress has been made in revising national drug policy and adopting artemisinin-based combination therapy for treatment of uncomplicated falciparum malaria in all countries with \( P. \) falciparum. All countries have been scaling-up insecticide-treated nets (ITNs/LLINs) and progress was observed but the net coverage remained low. Indoor residual spraying (IRS) was carried out only in some countries and LLIN coverage is as low as 5%. Though in most countries the malaria burden remained high, some have made good progress and were aiming for malaria elimination.

The most common constraint was lack of well-trained human resource at the field level, such as district officers who have to control all vector-borne diseases, entomologists, vector control officers and malaria microsopists, etc. Malaria at the international and inter-district borders is a concern of some countries. Prevalence of drug resistance remains a key issue in SEAR with the emergence of artemisinin resistance in the Mekong Region. Most countries have managed to reduce the malaria transmission with added external resources (in particular GFATM). However, sustainability is a major concern for countries that rely heavily on external funds.
Discussion

- Data from the private sector is generally missed and causes underreporting of malaria.
- Denominators used for coverage indicators are variable and this necessitated standardization of “population at risk”.
- Member States are implementing ITN/LLINs and some are also implementing the IRS. The quality of IRS and LLINs usage are not known and need investigation.
- There is no clear evidence of any added benefit of using combination (ITN/LLIN & IRS) and single intervention; hence, there is an urgent need for operational research.
- As countries are scaling up LLINs, LLINs are distributed in communities without practical advice regarding the expiry date of the nets. This would lead to utilizing nets that are not effective. It is suggested to coordinate with manufacturers and find ways to indicate for how long the nets will be effective.
- While some new drugs are being developed, little is known about the malaria vaccine. So far, a vaccine candidate (RTSS) is in phase III multicountry trial in Africa. It is anticipated that in the next few years, data will be critically analyzed to see if the vaccine candidate is efficacious. There is a tentative plan to establish a department for development of malaria vaccine in WHO HQ.

3.2 Poster sessions:

Participants were divided into three groups and were assigned to critically review country posters and present key observations.

Key discussion points in group presentations

Malaria case definition

- There is a wide gap between clinical suspected malaria and confirmed malaria (by microscopy and RDT) observed in all countries except Thailand which relies on microscopic diagnosis
As a result the disease burden of malaria may also be overestimated though there is underestimation because of missing data from the private sector.

- Patients are wrongly classified as malaria cases and treated without parasitological confirmation and miss the opportunity of getting appropriate treatment. Unnecessary medication increases the risk of drug resistance.
- Resources can be used more cost-effectively.
- It was recommended that: WHO should update case definition including laboratory test and guide countries on indication for treatment with antimalarials; and provide feedback to appropriate sections in the Organization to devise a health worker level flow chart for differential diagnosis and appropriate treatment of malaria-mimicking conditions.

**Identification of high-risk area**

- A proper definition of “population at risk” is required. High-risk population should be defined considering the population at risk at the smallest unit as possible (e.g. community level) and not just the aggregate of the total target population of the district.
- Micro-stratification of the sub-district endemic pockets can ensure a realistic estimation of the disease burden of malaria.

**Government ownership of the programme for sustainability of achievements**

- Although there are opportunities for extra-budgetary funds, they are time-bound and likely to end at some point in future
- If adequate budget is not available, it will be difficult to sustain achievements because malaria control programme interventions are quite expensive. It was suggested that a greater allocation of the government budget was an indicator of the ownership of the programme.
Inter-sectoral approach

- Malaria control requires an integrated approach and quicker results can be achieved with the involvement of other sectors of the government and NGOs.
- Generally, opportunities for partnership exist at the international, national and community levels considering the diversity of the disease control programme.
- The focus should be on an integrated approach for vector control for all vector-borne diseases.

Cross-border control of common communicable diseases

- Several countries reported a significant problem of malaria at international borders which required strong collaboration with neighbouring countries which was difficult to achieve and sustain. However, WHO was requested to help strengthen cross-border collaboration.

3.3 Malaria disease burden and indicators

Malaria mortality study in India

Dr Raju Jotkar, the co-investigator of the study, presented the Million Death Survey which was a representative, verbal autopsy-based assessment of all causes of mortality and cause-specific mortality in India. The results showed that malaria mortality in India is roughly nine-fold higher than the WHO estimate (15 000 deaths annually versus 136 000 deaths). It was found that mortality was highest in the eastern and northeastern parts of the country which was compatible with the reported deaths. Regarding age distribution of deaths, it was different from findings in Africa where death was heavily skewed toward the under-5 age category. The malaria mortality burden in India falls heavily on the late middle-aged and elderly, with some geographic variation in the rate of increase with age.
Discussion

- Dr G.S. Sonal, Joint Director, National Malaria Control Programme, India, voiced his concern that the estimated annual number of deaths due to malaria in the study of about 136,000 is too high. He said that, for example, it works to about 4,000 malaria deaths per month in Orissa and it is unlikely that such a high mortality rate, if correct, is unlikely to go unmentioned by the media.

- Dr Henri Van Den Hombergh, UNICEF, raised the issue that the mortality peak shown in the study was around the month of July. However, the peak incidence of falciparum in most parts of India is around October-November and therefore, this aspect needs review. Dr Jotkar said that the needful will be done. It was recommended that the investigators have this study published as soon as possible so Member States can learn about the study methodology.

- Clear national and regional targets need to be set up for malaria in the light of international commitment and agreed international targets.

- The falciparum and vivax burden has still to be fine-tuned across Member States. Disease trends have to be based on confirmed cases only by species. Regularly updated national stratification and micro-stratification at district, sub-district and village level (to identify endemic pockets/active foci) through routinely captured epidemiological data will contribute to capture information needed to target activities and measure the disease burden on a more real-time basis.

World Malaria Report 2009 and estimation of malaria burden at the global level

Dr Richard Cibulskis summarized the key findings of the World Malaria Report 2009 that would be published in December 2009. It was observed that funding for malaria control increased enormously, i.e., 20 times in other WHO Regions especially Africa. Increased external funding in SEAR was modest as the ratio of funding by disease burden in SEAR was very low. Hence, SEAR remains under-funded for malaria control. Reduction in
deaths was highest in the African Region followed by SEAR whereas an increase in malaria deaths was observed in the Eastern Mediterranean Region. In SEAR progress was observed in Bhutan, DPR Korea, India, Nepal and Thailand.

He presented estimates of malaria and emphasized that so far there was no standard method for estimation. SEAR reported the lowest proportion of malaria patients seen by the government sector.

**Discussion**

- There is a need for more surveys to assess the true burden of malaria and also to know the extent to which patients seek treatment from the nongovernmental sector.
- Dr G.S. Sonal, Joint Director, National Malaria Control Programme, India mentioned that the estimation of malaria morbidity and mortality in India needs to be more realistic.
- Participants agreed that standardized methods for estimation of cases and deaths are required. Area stratification should be conducted for better estimation in future.
- There was a difference in the countries of WPR and SEAR regarding the utilization of private sector facilities.
- In view of the recent reports of severe vivax malaria, the case fatality rate (CFR) of *P. falciparum* and *P. vivax* should be reviewed. This issue was not addressed in the *World Malaria Report* 2009 but will be included in the next issue.
- There are several unanswered questions on malaria estimation, utilization of private and public sectors, CFR, etc. It would be useful for some research institutes such as the Swiss Tropical Institute to conduct mathematical modeling on these issues.

**Harmonization of WPR-SEAR in implementing Asia malaria indicators**

**Dr Richard Cibulskis / Dr Charles Delacollette**

A set of malaria indicators on surveillance and programme coverage were presented. It was a modification of the global indicators (proposed by the Global Malaria Programme) that fit more the epidemiological settings of
Asia. It was felt that there are too many sets of indicators and too many indicators used by malaria programmes as proposed by WHO and partners/donors. This made monitoring and evaluation of malaria programme a complicated issue and this devalued the indicators. It was also noticed that the GMP indicators neglected IEC/BCC activities.

**Discussion**

- The difference between “targeted population for an intervention” and “population at risk” was discussed. The participants again emphasized the need to standardize the definition of “population at risk”.
- The ITN potential coverage indicator does not include the ITNs distributed earlier and reimpregnated during the current year. The GMP will address this issue.
- It was also stated that the life of the LLINs was kept at three years whereas some of the LLINs have a life of five years. WHO Pesticide Evaluation Scheme (WHOPES) should be consulted before developing the indicator for measuring net coverage.
- Dr Mohammad Asri Amin (Indonesia) said that it is very difficult to obtain data on the traditional nets and impregnated nets and many surveys are required for it.
- The importance of area stratification was highlighted while using indicators for measuring progress.
- There should not be frequent changes of indicators as countries have malaria reporting system as part of the Health Management Information System (HMIS) and frequent changes are difficult to implement. Dr Robert Newman mentioned that there is a need for a menu of indicators from which the individual countries can choose their own indicators.
- The root of the problem of poor malaria surveillance is that malaria programmes do not have adequate diagnostic facilities and no involvement of the private sector. Countries should improve diagnostic facilities for disease control and to improve surveillance.
3.4 Panel discussion on contribution of partnership/donor support to malaria control in SEAR

Asia-Pacific Malaria Elimination Network (APMEN)

The network representatives (Prof Whittaker and Dr Hsiang) presented the mission, structure, governance, activities and funding of the Asia Pacific Malaria Elimination Network (APMEN). APMEN organized the inception meeting in Brisbane, Australia in February 2009 and has planned the second annual meeting in Sri Lanka in February 2010. The primary focus of APMEN is advocacy, information sharing and to support countries in capacity building and fund raising. Participating countries are in the SEA and WP Regions which aim to eliminate malaria country-wide or in parts of the countries. The participants discussed several issues that could be addressed by APMEN.

- As the elimination scheme would have to eliminate vivax malaria it was felt that several issues of vivax awaited practical solutions. The issue of G6PD deficiency and administering primaquine was raised. Prof Whittaker explained that there is no definite and good test to screen G6PD deficiency status at field level. She said that a lot of research was being conducted globally.

- The advantage of tafenaquine over primaquine was discussed. Tafenaquine can be given over a period of three days and compliance is generally higher when compared with primaquine.

- There was discussion on the operational guidelines on malaria elimination for Asia Pacific countries that APMEN planned to develop for participating countries. There was also discussion on the legitimacy of developing guidelines as it is the role of WHO. APMEN responded that it would work in consultation with WHO (SEAR and WPR) and this work will not duplicate WHO work but rather support WHO. The guidelines that are specific to epidemiological settings in Asia and Pacific are not available.

- The international donor community is encouraged to support national programmes and regional institutions towards harmonized technical collaboration with endemic countries.
The bi-regional malaria elimination guideline is a priority to be
developed as well as a priority research agenda in malaria
elimination. WHO, as the international technical organization
dealing with public health has to maintain its leadership in
providing technical support to WHO Member States e.g. to
coordinate the development of guidelines and find agreement
on the research agenda in relation to programmatic goals.
Interested partners and networks like APMEN are welcome to
facilitate resource mobilization and advocacy (e.g. P. vivax
control and elimination approaches) through appropriate
international channels.

Emergence of artemisinin resistance at the Thai-Cambodia border and
its containment

Dr Delacollette presented the evidence of artemisinin resistance reported
by Cambodia and Thailand. The most important clinical finding is
prolonged parasite clearance time (PCT) which is an early sign. The issue
raised concern regarding loss of advantage of this powerful drug in rapidly
clearing malaria parasites. He presented the seven core strategies applied
by the two countries aiming to eliminate resistance parasites from Zones 1
and 2 of the resistance containment project. The project was financially
supported by the Bill and Melinda Gates Foundation in collaboration with
several technical partners including WHO.

There was discussion on counterfeit drugs that could make the
situation worse. It was also stated that all drugs used for therapeutic efficacy
studies are of good quality but counterfeit drugs are prevalent in the
Mekong region and complicated the issue. Myanmar is closely monitoring
drug resistance with special focus on its eastern border for fear that the
resistance may spread to Myanmar. Some evidence of prolonged parasite
clearance time in studies at the sentinel sites in Yunnan Province of PR
China, and in Viet Nam were presented.

This is an example of effective cross-border collaboration which is
required for cross-border malaria control and to prevent the spread of drug
resistance across the border. It was felt that low endemic countries or areas
in a country should strengthen their disease surveillance in general but also
at their borders where the disease burden is usually very high. This will also
help to contain cross-border malaria in the neighbouring countries and contribute to address common issues like multi-drug resistance (e.g. ACT).

Though most cross-border collaborations are neither functional nor sustainable, WHO should establish and further strengthen border collaboration through development of well-funded, cross-border strategic plans of action.

**Role of UNICEF in malaria control in India**

Dr Jorge Caravolta explained in detail the outbreak in Munger District in Bihar, India. *P. falciparum* was the cause of the outbreak in which several children died. UNICEF provided supplies and conducted rapid assessment of the malaria situation and outbreak control in close collaboration with local authorities. Dr Sonal explained the reason and said that outbreaks can occur in areas of previous no/low risk of malaria. As to the causes of the outbreak, Dr Jorge explained that the causes were multiple ranging from parasite to vector factors, climate change and migration. Dr Gunasekar explained the importance of strengthening the surveillance system in previous low/no risk areas.

The lessons learnt from this outbreak was that there was inadequate epidemic preparedness. The most important factor was lack of a stock of key malaria diagnosis and treatment officially which would have been useful in saving lives. There was a strong feeling that all countries, especially operational officers in areas with epidemic potential, should pay more attention to epidemic preparedness.

**Discussion**

- Member States which are engaged in malaria elimination should strengthen and maintain a performing surveillance system integrated with other diseases. Such an integrated surveillance system needs financial support and should fully engage both the public and private sectors in an articulated and collaborative way. Case-based reports are essential instead of cumulative numbers as it would require case-by-case active follow up.

- The private sector and civil society engagement is essential to reach national programmatic goals against time-bound targets.
Such collaboration is also essential to improve case management (access to and use of performing health care services by patients), prevention across sectors and increased performance of surveillance in general. So the capacity of recognized private providers from the private sector should be enhanced in articulation with providers from the public sector to support implementation of updated national policies and advocacy.

- Endemic countries are largely dependent on external funding for malaria control. Efforts should be made to maintain international and partners’ engagement but also to encourage increasing use of domestic funds to support [integrated] malaria control interventions.

### 3.5 Integrated vector management and environmental issues related to malaria

**Integrated vector management (IVM)**

Dr Dash emphasized the changing situation and malaria epidemiology in many countries as well as the changes in vectors and their behaviour. The environmental factors for vector-borne disease control needs greater attention. Every vector has its own domain as seen in the distribution pattern in the SEA Region and hence no single method can be used for effective vector control.

He elaborated on the concept of IVM and its implementation status in the Region. IVM is seen as a strategic approach to select vector control options building on ecological characteristics and practices / interventions from other sectors (e.g. agriculture). The IVM concept is based on evidence; not only entomological data but also epidemiological data, climate change, anthropological factors, etc. IVM needs evidence-based vector control methods. IVM aims at promoting judicious use of insecticides and the emphasis is on improving the capacity at national and field level. Most importantly IVM requires a strong multisectoral approach as well as collaboration with other departments, other agencies, non-health partners (e.g. agriculture) and strong community participation. IVM is applicable for malaria and other vector-borne diseases. Though IVM is not a new concept, countries do not have a clear understanding to carry it out properly.
Only a few countries in the SEA Region are implementing IVM and efforts are being made by SEARO to scale up IVM. The IVM training modules will be released shortly and the training programme supported by SEARO will start in 2010. There is a need to develop a strategy for public health pesticide management as has been done in Western Pacific Region in October 2009.

**Integrated pest vector management (IPVM) project in Sri Lanka**

Mr K. Piyasena, Department of Agriculture, Sri Lanka, presented details of the IPVM programme carried out by the Mahawali Authority, the Anti-Malaria Campaign and the Department of Agriculture. The project started with funding from FAO in 2002, and received UNEP funding in 2005. WHO engaged in IVM in 2006-2007. It was observed that after implementation of IPVM crop yield increased significantly and insecticide application was reduced by 85%.

The salient features of IPVM included community programmes, socialization of farmers, farmer exchange programmes and formation of IPVM clubs.

In model villages where training of farmers by trainer farmers was conducted it was observed that the villages produced insecticide-free paddy and more bee honey products. The benefits of the vector-borne disease control programme were:

1. Reduced vector breeding
2. Increased ecosystem integrity
3. Reduced reliance on insecticides
4. Personnel protection
5. Improved living conditions

The sustainability of the IPVM programme is a key concern. Fortunately, the IPVM programme in Sri Lanka is functioning in most of the pilot project areas.
Country experiences on IVM and IPM

Dr G. Sonal (India) reported that vector control was often carried out without thinking about fundamentals of IVM for instance IRS, LLINs, larvivorous fish, etc. They have conducted IVM without knowing that they were carrying out IVM. But this was carried out without the engagement of other sectors and a full understanding of the ecological situation. Other departments also have a role in the control of malaria but collaboration was not uniform.

Dr Khurana (India) stressed that unnecessary use of insecticides should be avoided. Insecticide susceptibility should be monitored and safety should be considered. Whenever necessary, insecticides should be used as well as bio-larvicides. Farmers should also be trained in vector control methods.

Mr Iqbal Mahmud (Bangladesh) shared his experience on integrated pest management (IPM). Environmental protection commenced in Bangladesh in 1989-1990 and till now the ministry has trained over 20 000 farmers. Providing guidelines are critical for IPVM implementation, he stressed.

Mr Purushotam Tiwari (Nepal) shared his concerns on climate change. The Ministry of Environment and Technology had set up five special teams to work on climate change under the IPVM programme. He informed that the Ministry of Health was responsible for preparation of policy on minimizing the impact of climate change on health, in particular vector-borne diseases.

The National Academy of Science had implemented the IPM model in villages, he added.

Miss Saranchit (Thailand) shared examples of IPM funded by GTZ. The IPM project was started to control major pests of fruit crops (mango, durian, etc). Four years later the Department of Agriculture expanded the programme to involve farmers. At present the ministry has implemented IPM throughout the country.

Dr Purwanti (Indonesia) reported that the IPM concept had been implemented in 1990.
Discussion

- IPVM is an important concept for malaria control as it is based on evidence. Vector control can be carried out with the help of other sectors and farmers. SEAR should support Member States in the development and adoption of policy and strategy according to the country situation.
- The Ministry of Health needs to collaborate with other sectors and departments for implementation of IPM.
- IVM and IPVM concepts are very important and depend on the malaria control and elimination strategy. Integrated vector management is important for all countries that are implementing the malaria control strategy. For countries that are implementing malaria elimination-IVPM is even more important.
- IVM is being carried out without a clear knowledge of this concept. WHO-SEARO has planned for capacity building on IVM. A training programme on IVM is planned in 2010 and another six-week training course on climate change will be announced in 2010.
- Adequate human resource for malaria control is important. Stratification of the malaria burden should be carried out and vector control organized according to the epidemiological stratification.

Climate change and health

(A teleconference was held by Dr Abdul Sattar Yoosuf, Director SDE, WHO-SEARO on the above topic)

Dr Sattar drew attention to the increasing trends of global temperature and carbon dioxide emission and the evidence of rising of sea level, greenhouse effect and the spreading of mosquitoes at higher altitude, etc. Atmospheric temperature was rising approximately by 0.2 degrees Celsius per decade. These changes could affect malaria transmission as well as other vector-borne diseases. This would affect the poor and communities with poor health services the most.
The health sector has been very active in raising public awareness on the impact of climate change during the past 3-4 years. The issue is a global concern and was discussed in the World Health Assembly recently. WHO-SEARO organized a meeting in Bali in 2008 where the Regional Framework for Action on climate change was developed. The New Delhi Declaration on climate change was another regional initiative. Dr Sattar presented elements of the Regional Action Plan which included: strengthening health system capacity; increasing awareness on climate change and health interactions; promoting applied research on vulnerabilities to climate change; engagement of local communities; and collaborating with key sectors to assess health impacts of adaptation or mitigation strategies / integrated approach (National Environment and Health Action Plans (NEHAPs)/ healthy settings, etc.

Beside efforts on mitigation of the impact of climate change on health, WHO-SEARO also took action in contributing in reduction of CO$_2$ footprint by changing light bulbs, printing paper on both sides, reducing staff traveling and using more teleconferences etc.

**Impact of climate variability on malaria in Sri Lanka**

Dr Priyanie Amerasinghe presented her research study on the impact of climate change on malaria transmission. She reported the seasonality of malaria cases that was strongly correlated with rainfall. The correlation is linear relationship with the time lag of 2-4 months.

Dr G.N.L. Galappaththy who was a co-investigator of the study added that there were several factors influencing malaria transmission in the study areas, e.g. effect of vector control, insecticides usage and mosquito behaviour, etc.

**Discussion**

Following the presentation the participants discussed on how to use spatial statistics and meteorological information to support malaria control, and how to apply a simplified epidemiological study model for long-term prediction of malaria epidemics. Research institutes should play an important role in conducting such research studies to support the malaria
control programmes. However, the research institutes need to be more aware of the changing ecology which has a significant impact on malaria transmission.

**Significance of environment on malaria**

Dr Allan Schapira said that the countries in the Region are broadly classified as “Indo-Malay Biogeographical Region”. Considering the malaria vectors and epidemiological characteristics, malaria in the Region can be classified into several basic malaria ecotypes. These included: (a) plains and valleys with traditional agriculture; (b) forest, forest fringes and foothills (throughout the Region, e.g. Orissa State of India and SEA countries); (c) mountain fringes; (d) desert fringes (e.g some states of India); (e) coastal areas; (f) urban malaria (e.g. India with *An. stephensi*); (g) areas with agricultural developmental projects; and (h) war zone and areas with civil disturbance. There was some evidence that *An. stephensi* which is the main vector in arid areas has been gradually spreading eastwards to countries in the Region. This phenomenon should be closely monitored.

He summarized that malaria risks associated with environmental changes are highest in relatively arid areas, coastal areas and in agricultural plains. Malaria can be controlled by vector control such as IRS or ITNs and treatment. Serious problems are usually a consequence of lack of awareness in other sectors. Revitalization of environmental management could reduce costs in many cases. In development projects, population movement (“tropical aggregation of labour”) is often more important than environmental change. However, environmental changes may have a positive or negative impact on malaria. In some instances, e.g. road construction in malarious areas in Yunnan Province of PR China did not increase malaria risk in construction areas at all but the workers who slept in forests contracted more malaria as forest vectors are more active. Another study conducted by RS Sharma showed that dam construction in Orissa State of India even decreased malaria risk. Most ecotypes of malaria can be easily controlled with existing tools, except forest-related malaria such as in the Mekong Region and urban malaria in India that remain the main challenges to malaria control in the SEA Region. IVM is effective in controlling other vector-borne diseases and not only malaria.
Panel discussion on preparedness and mitigation impact on malaria (Mr Purushotam Tiwari, Dr Priyanie Amerasinghe, Dr Allan Schapira, Prof. Tang Linhua and Prof. Wijitr Fungladda).

The use of satellite data correlated with population maps, forest cover maps and malaria incidence will be helpful in forecasting malaria epidemics. At times satellite data can be obtained free of charge.

Temperature directly affects the physiology of mosquito vectors. It also affects malaria parasite density. Therefore, transmission of malaria may vary due to global warming. An example was that an increase in temperature in Tamil Nadu and Orissa had a negative impact as it was observed that malaria incidence had decreased.

In responding to the impact of climate change on health, the Environmental Protection Act was implemented in Nepal. The Ministry of Health works closely with the Ministry of Environment but closer collaboration is required.

In Thailand there was a study on the correlation of living conditions with malaria transmission. The activities to be carried out by the malaria control and elimination programmes to prepare for global warming included: a) strengthening of surveillance and early warning system; b) strengthening the entomological surveillance to respond to the increase of temperature effect for mosquito behaviour; and c) developing better vector control methods.

Some participants felt that climate change and its impact on malaria was not yet properly addressed. This required evaluation or modeling to measure its impact on malaria transmission. The malaria control programmes should have guidelines or protocols and know what data and variables need to be collected. Key indicators are required to measure its impact on malaria. Dr Dash informed that WHO-SEARO had developed a set of standard protocols for Member States. These include retrospective, longitudinal studies and a project protocol on forecasting epidemics. These protocols will be made available on the SEAR website soon. Two projects on the possible impact of environmental changes on vector-borne diseases in Nepal and India were funded.
The health sector needs to pay more attention to the health impact of climate change. Finally, the most important measures for malaria control programmes are that they should strengthen the surveillance system, epidemic warning system and establish a rapid response team.

3.5 Strengthening partnership for malaria control in the South-East Asia Region

**Partnership building and advocacy**

Partnership is essential to foster better collaboration and coordination for effective malaria control in the Region. Several development partners presented their roles in supporting malaria control in the Region.

**RBM partnership:** This is a global advocacy body based in Geneva to foster collaboration, partnership and increased support for malaria control. RBM partnership developed the Global Malaria Action Plan (GMAP) in collaboration with several key partners, donors and Member States which was launched in September 2009.

**APMEN:** Dr Hsaing highlighted the role of the newly established network that was presented in the earlier session. She mentioned that support by the network can be further extended. It was observed that there was a wide knowledge gap in moving from malaria control to elimination.

Several lessons learnt could be shared; for instance; malaria control at the international borders, control and elimination of vivax malaria; operational research on vivax, etc. The need for a rapid test for G6PD deficiency and application of geographic information system (GIS) was discussed.

**AUSAID:** USAID was the only donor agency attending this meeting. Dr Robert Condon highlighted the intention to provide support, both financial and policy support, but mentioned the global competition and scarcity of funds. Vector-borne diseases have to be prioritized by the national authorities and donors can only bridge the funding gaps. The national action plan must be available for donors. There should be harmonization among donors and they should jointly address issues...
including policy, management, monitoring and evaluation, and other areas of concern. Though harmonization of partners/donors is important, coordination among partners/donors is complex and always challenging. Designs for coordination and linkages need to be aligned with modern partnership models. Joint monitoring exercise by partners/donors is useful for harmonization.

Dr Condon said that AUSAID committed financial support to APMEN. He also mentioned that besides funding malaria control programmes and other health programmes, it was necessary that AUSAID also provided technical support on surveillance, monitoring and evaluation, operation research and programme management. This is done directly through the government or through multilateral agencies like WHO. This is essential though within countries there are mechanisms and universities and centres of excellence that can provide technical support to the national malaria programmes. He also emphasized that long term predictable funding is critical for malaria control.

**ACTMalaria:** Ms Hugo presented the background of ACT Malaria that stands for Asian Collaborative Training Network for Malaria. It was established in 1996 with the primary focus on human resource development. It started with 11 Member States and presently has 12 members. Ms Hugo explained the mission and objectives of the Network referring to training needs of countries for malaria programmes. She gave a short briefing on the training courses conducted by ACT Malaria and stressed the need for quality in programme management, malaria microscopy and case management. Quality assurance (QA) is one of the major concerns for country programmes especially QA for drugs, diagnostic tests, vector control, mosquito-nets etc. ACT Malaria's current emphasis is on the quality enhancement for entomologists and support for insecticide resistance monitoring.

**Malaria Consortium:** Dr David M. Sintasath mentioned that the Malaria Consortium is a non-profit NGO based in London and with a station in Bangkok where he is working. Their areas of interest include: (a) drug resistance/policy and strategies; (b) monitoring and evaluation and cross-border activities; (c) collaboration with ACT Malaria, etc; (d) building national capacity for monitoring and evaluation; and (e) dissemination of information of best practices, etc.
Dr Teuscher summarized from the partner’s views that there were at least three key areas of concern. These areas included: (a) policy/strategies; (b) monitoring and evaluation capacity; and (c) harmonization of donor’s support. We should try to avoid fragmented funding. The emphasis should be on dialogue with the private sector for effective partnerships.

Some additional issues identified during the discussions included:

1. Harmonizing procurement and supply of drugs, diagnostics, LLIN and insecticides.

2. Quality assurance for diagnosis and treatment.

3. Coordination gap between the central level and the states in India in programme implementation. Funding at state level by the donors. States do not have capacity on bulk procurement, etc.

4. Problem in hiring overseas experts for technical assistance; salary discrepancies with government salary scale, etc.

5. Private sector’s dialogue for collaboration is usually inadequate except in some cases for GFATM malaria projects.

6. Involvement of private doctors.

7. Reporting through health management information system (HMIS).

It was pointed out that there were several partners and donors in this meeting but there was no private sector or community representation. Participants from India responded that though the private sector is not represented in this meeting but work had been done in building up public-private partnership. An example of partnership with tea gardens in India was mentioned. Myanmar participants said that the Myanmar Medical Association, private doctors and community-based organizations played active roles in malaria control with good coordination with the national programme. Partnership has been broadened in most countries as compared with the situation earlier.

**Multisectoral collaboration/approach for malaria control**

Prof. Pratap Singhasivanon explained the need for multisectoral collaboration for malaria control and invited participants from other than
the Ministry of Health to share their experience. He emphasized the positive role of all partners in malaria control especially in areas of fund raising, capacity building and multi-agency coordination.

- **Bangladesh**: The Ministry of Agriculture is implementing IPM only and is in the preparatory phase of IVM. The Ministry of Health is preparing to collaborate with the ministries of agriculture, forestry, environment and livestock for malaria control. It is hoped that a network would be set up soon with concerned ministries.

- **Bhutan**: The Immigration Department conducts malaria screening tests for migrant workers.

- **DPR Korea**: The Malaria Control Programme is preparing to collaborate with the ministries of agriculture and environment at the planning and policy level.

- **India**: Pesticide regulation and insecticide safety issues, etc. are the responsibility of the Ministry of Agriculture. The Ministry of Environment looks after environmental management, waste management, clearance for roads/canals/buildings and environmental issues etc. Collaboration between the two ministries is on an ad-hoc basis and is not yet regular.

- **Indonesia**: The issue of insecticide regulation policy and local regulation was explained and discussed. The participants also gave examples of collaboration with primary schools (under the Ministry of Education), and the Ministry of Forestry; Ministry of Agriculture, and the Centre for Health Education.

- **Nepal**: The Ministry of Agriculture has taken up the issue of biosafety with the Ministry of Health and discussed cooperative action to reduce adverse effects of insecticides.

- **Sri Lanka**: Experience on collaboration with the Ministry of Education was shared. The role of the Ministry of Education in collaboration with the Health Ministry is very good and includes malaria and as well as new pandemic influenza.

- **Thailand**: The Ministry of Agriculture elaborated on its collaboration on agrochemical policy, thermal health issues and
local agro-eco-system to manage pests. The IPM/IVM project was implemented through farmer field schools.

- **Timor-Leste**: To implement a multisectoral approach, coordination between high level officers of the Ministry of Health and other ministries is strongly required. The malaria control programme organized a malaria campaign on World Malaria Day in April 2009 and participation by other ministries was good.

**Discussion**

Following country briefings on multisectoral approach and discussions, the participants expressed their satisfaction on learning about several best practices on this issue.

The participants acknowledged that the offer by ACT Malaria for organizing an international workshop namely “Broadening Involvement Team Training Workshop for malaria control (BITTW)” could provide fundamental skills on building a multisectoral approach for malaria control.

As the term, “multisectoral approach”, was newly introduced for malaria control in SEAR, it was suggested that the original term, “intersectoral approach” which was officially used by WHO and the UN should be used instead.

**4. General recommendations**

**4.1 Recommendations to WHO:**

1. In view of weak surveillance, monitoring and evaluation (SME) of the national malaria control programmes and lack of standard definitions for indicators, WHO is requested to further strengthen national capacity in SME using available resources along with interested partners. Among priority tasks, WHO should focus on the definition of “population at risk” in order for it to be used consistently across Member States and the finalization of a minimal set of core indicators.
(2) The global malaria indicators (GMI) proposed by GMP/HQ to annually reflect global progress made in malaria control should be finalized as soon as possible. Member States are encouraged to routinely use and report on GMI as part of their national programme indicators.

(3) In order to better estimate the malaria disease burden at country level, WHO (GMP/HQ and Regional Office) should provide appropriate technical guidance and support to Member States.

(4) In view of the continuing low coverage and poor quality of parasitological diagnosis in both public and private health care facilities, WHO should continue to provide support in strengthening national capacity to expand diagnostic facilities and to establish mechanisms to ensure quality assurance of Rapid Diagnosis Tests (RDTs) with special attention on combined - RDTs for *P. falciparum* and *P. vivax* (COMBO test).

(5) In view of documented *P. falciparum* resistance to artemisinin and ACTs in the Greater Mekong Sub-region, networks engaged in drug resistance monitoring in non-Mekong countries should be revitalized and supported.

(6) In view of increasing importance of *P. vivax* infections in the Region, more attention should be paid to anti-relapse treatment with primaquine. WHO should provide guidance on anti-relapse treatment of *P. vivax*, support prevalence surveys on G6PD deficiency and advocate for the development and validation of rapid tests to detect severe G6PD deficiency.

(7) In view of the lack of evidence of the added value of using both IRS and ITN, WHO should encourage research on the combination of ITN and IRS to document the additional benefit over single intervention in relevant epidemiological settings.

(8) Acknowledging the fact that too few Member States are actually implementing IVM, WHO should support IVM implementation following WHO guidelines, and strengthen capacity building on IVM in all Member States.
4.2 **Recommendations to Member States**

(1) To routinely use over time and space the standardized definition of “population at risk” as the commonly used denominator to measure progress against targets.

(2) To routinely use and report on GMI as part of their national programme indicators.

(3) To strengthen/expand malaria diagnostic facilities with appropriate equipment and human resources (microscopy or Combo-RDTs) to ensure quality malaria diagnosis and appropriate treatment. Quality assurance/quality control procedures for microscopy and Combo-RDTs should also be set up and strengthened with guidance from WHO.

(4) To promote and scale up artemisinin-based combination therapy (ACTs) for treatment of falciparum malaria and chloroquine for treatment of vivax malaria. In parallel to the large use of ACTs and to address substandard drugs, Member States have to monitor the therapeutic efficacy of their first-line anti-malarial drugs as well as their quality.

(5) Control of *Plasmodium vivax* needs serious attention from a programmatic perspective. National programmes have to monitor mortality and severe manifestations due to *P. vivax* infections. The proper scaled-up use of primaquine (regimen and dosage) in areas where G6PD deficiency is prevalent has to be further considered and clarified.

(6) Therapeutic efficacy studies (TES) are essential to regularly update national and regional anti-malarial drug policies and monitor the geographical extent of drug resistance. National malaria control programmes should perform TES following the WHO standard protocol expected to produce quality results with active supranational network support.

(7) To strengthen strategic and effective intersectoral collaboration through appropriate national forums taking into account efforts by partners and other sectors aiming at reducing malaria risk and ultimately protecting vulnerable populations.

(8) Effective cross-border collaboration and cross-border action remain a challenge to Member States. Jointly funded, cross-
country or provincial plans of action have to be developed, implemented and monitored to address multi-country challenges with international support.

(9) Engagement of the private sector, civil society and other government sectors in malaria control is seen as an essential contribution to reach national programmatic goals against time-bound targets. Such collaboration is also essential to improve case management (access to and use of performing health care services by patients), prevention across sectors and to increase performance of surveillance in general. In order to scale up implementation of updated national drug policies in both the public and private sectors, Member States should actively promote and advocate for the national drug policy and enhance capacity of “recognized” private providers in collaboration with public providers.

(10) Member States should establish epidemic preparedness and ensure an adequate stock of key malaria diagnostic supplies and medicines which are crucial to save lives.

5. **Field visit to Embilipitiya, 29 October 2009**

A field trip was organized to provide experience and demonstration of IVM–IPVM. During the first three days of the consultation, there was a fruitful and elaborate panel discussion on IVM–IPVM after a detailed presentation. All the participants were taken to a special area in Embilipitiya, Walawa. Walawa area is highly populated with good living standards. It is a fast-developing area with a newly built port and an airport coming up. IPVM is implemented there and Mr Piyasena, Deputy Director, Plant Protection Department made a presentation on the IVM–IPVM programme. The objective of the programme is “enhancing the role of local communities in sound ecosystem management: IVM for the health sector and IPM for agriculture sector”.

IPVM started in 2002 and is implemented in 11 districts of Sri Lanka. The following activities have been completed so far:

- Training of field staff on IVM, IPM and FFS (Farmer Field Schools).
- Development of curriculum for IPVM.
- Conducting IPVM FFS.
- Trainers’ studies
- Farmers’ studies
- Formation of IPVM clubs / societies (to sustain the programme).
- Monitoring mosquito population.
- Refresher training of facilitators.

Group activities to destroy breeding sites are being continued. The future plans are to:
- Expand to other areas;
- Train more people; and
- Generate financial support.

A visit was organized to Kirribbanwewa village (Moneragala District of Uva Province), where there is an IPVM club and disease vectors are monitored. Adult mosquito collection, larval surveys in paddy fields, irrigated canals, seepage pools and tank margins are carried out every fortnight. The agriculture department is providing manure to increase mosquito predators and level the paddy fields to allow free flow of water (avoid stagnant water).

All participants were divided into three groups along with the volunteers from the IPVM club. The step-by-step approach for field application of IVM – IPVM was discussed.
Annex 1

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The following local officials and community members participated during the filed visit on 29 October 2009

1. Mr Wahigatunga Perera, Resident Project Manager
2. Mr K. Piyasena, Deputy Director Plant Protection, Agriculture Department, Sri Lanka
3. Ms Jeewani Harischandra, Entomologist, Anti Malaria Campaign
4. Mr R. M. Ratnayake, Entomological Asst, Anti Malaria Campaign
5. All members of the IPVM club, Kirribbanwewa
Annex 2

Message by
Dr Samlee Plianbangchang, Regional Director,
WHO South-East Asia

(Delivered by Dr Firdausi Rustum Mehta, WHO Representative, Sri Lanka)

Malaria continues to be one of the priority communicable diseases at global, regional and country levels. In the South-East Asia (SEA) Region, malaria continues to be a serious public health problem. It is endemic in all Member States of the Region except Maldives where its transmission ceased in 1984.

During the last five years, the numbers of confirmed malaria cases in SEA Region have varied between 2 million and 2.5 million each year with the number of deaths ranging between 3000 and 5000. However, it is estimated that at least 21 million cases and 120 000 deaths occur every year. Vivax malaria is prevalent in the Region and accounts for approximately 50% of the total malaria cases. The presence of both parasites makes the control of malaria more difficult, especially in terms of diagnosis and treatment.

The Region is now confronting the drug resistance of both Plasmodium falciparum and Plasmodium vivax. The multidrug-resistant falciparum is prevalent in the Greater Mekong Sub-region and is spreading in all directions. The artemisinin-combination therapy is the best intervention and has been adopted in all countries that have reported falciparum malaria. Unfortunately, the emergence of artemisinin-resistant falciparum malaria was recently reported in two countries of the Mekong region, i.e. Cambodia and Thailand. This is a global concern and requires a special effort in order to prevent it from spreading to other areas of the world. Efforts are being made to eliminate these parasites. Besides resistance of parasites to antimalarial drugs, the Region also reports resistance of several mosquito vectors to insecticides. This limits the efficacy of insecticide-based malaria prevention.
In the SEA Region, prevention and control of malaria is further complicated by several epidemiological and socioeconomic factors. It has been documented that the risk of malaria increases due to developmental projects, such as dam construction, as well as due to forestation that creates favourable conditions for mosquito vectors. People living in border areas, hard-to-reach populations, the urban poor and ethnic groups are at a greater risk of malaria than the general population. Because of climate change, there is potential for an increase in the risk of malaria and other vector-borne diseases. There is no doubt that the poor and vulnerable populations will suffer more than ever. Health programmes, like the malaria control programme, cannot handle this task alone as it is beyond their mandate. A strong collaboration therefore needs to be built with sectors that are responsible for these socioeconomic and environmental changes.

The Strategy for Malaria Control in the SEA Region has been revised for the period 2006-2010. The Revised Malaria Control Strategy was adopted by the Regional Committee for South-East Asia in 2006. The revised strategy calls for (i) Reform in the approach to programme planning and management; (ii) Revamping of surveillance and strengthening of monitoring and evaluation; (iii) Targeting interventions for risk groups; (iv) Scaling up of control of vivax malaria; and (v) Increasing coverage and proper use of insecticide-treated mosquito nets. Following concerted efforts made by Member States and a significant increase in resources for malaria control, progress in the malaria situation was observed in a number of countries during 2006-2008. Three countries in the Region are aiming for malaria elimination while others are scaling up the coverage of key interventions to control the disease and sustain the achievements. However, due to the very large population at risk, and due to the several technical and managerial problems referred to by me earlier, the achievements have not been satisfactory. Much more human and financial resources, improved programme management and political commitment are required in order to reach the relevant targets by 2010.

A clear understanding of the dynamics of the epidemiological and entomological aspects of the disease is essential. Malaria is not purely a health problem. In this regard, the current malaria control programme will not be able to achieve its goals unless a broad multisectoral and multidisciplinary approach and partnerships are established, strengthened and sustained. This also requires a paradigm shift in the conventional
malaria control programme. The malaria control programme was a vertical and specialized programme but now-a-days the national malaria control programmes are integrated with other vector-borne disease control programmes at varying degrees. Integration of vector control efforts for multiple vectors in a given area has been adopted for decades by countries. The integration necessitates updated knowledge of existing vectors in the areas. Moreover the programmes have to consider existing pests and pesticides currently used as this would have an impact on the resistance of disease vectors.

Integrated vector management (IVM) is a good example of this approach. We have to promote the holistic IVM concept by using effective tools against mosquito vectors with the full participation of communities and other health and non-health sectors. Besides integration of the programme, concerted efforts are needed to integrate vector control into disease surveillance, laboratory services and even in the areas of training and IEC. The area of malaria control is witnessing an increase in the number of players. As such, the malaria control programme cannot survive without it being reformed. Such reform must take into account the complexity of the disease, the multisectorality of the health system, changing lifestyles and evolving environment etc.

Ladies and gentlemen,

This consultation is timely because the integrated and multisectoral approach and partnerships are highlighted in the theme of the meeting. I am confident that Member States would have initiated actions in order to establish integrated approaches for malaria control in different ways and at various levels. It is timely to share experiences in multisectoral approaches and also review the progress made in malaria control and identify actions for Member States, as well as other relevant partners.

I am delighted to learn that several non-health sectors as well as NGOs, developmental partners and donors are present today at this consultation.

Finally, I would like to wish you fruitful deliberations and a pleasant stay in Colombo.
Annex 3

Agenda

(1) Opening ceremony
(2) Overview of malaria situation at global and regional level
(3) Review of situation and implementation of the Revised Malaria Control Strategy (RMCS) at country level (poster presentation)
(4) Malaria disease burden and indicators
(5) Review of contribution and roles of partners/donors to malaria control in SEAR
(6) Panel discussion on IVM -IPVM
(7) Panel discussion on ecological changes, climate changes and their impact on malaria – are we prepared?
(8) Panel discussion on strengthening partnership, multi-sectoral approach and advocacy for malaria control in SEAR
(9) Recommendations and conclusions.
(10) Closing.
(11) Field visit to Embilipitiya to observe IPVM implementation
This Regional Consultation was organized on 26-29 October 2009 to review the achievements and challenges in the implementation of the Revised Malaria Control Strategy in the South-East Asia Region 2006-2010. Several Member States of the South-East Asia Region reported progress in malaria control over the past seven years, during which reduction of malaria morbidity and mortality was also observed.

Environmental issues related to malaria transmission such as climate change, integrated vector management and the involvement of non-health sectors and technical partners were also discussed. The consultation provided an opportunity for participants from malaria control programmes and various ministries of Member States to share their experiences, lessons learnt and best practices in integrated approach to malaria control. Recommendations were made on strengthening surveillance, vector management and collaboration with relevant sectors. This document outlines the discussions and deliberations of this Regional Consultation.