Executive Summary

The burden of malaria in Asia is second only to Sub-Saharan Africa, with the disease endemic in virtually all the countries of the WHO[1] South-East Asia Region (SEAR). Although the reported deaths in the Region due to malaria have slowly declined, the proportion of cases of ***P. falciparum*** has steadily increased.

The Region also suffers from the highest burden of ***P. vivax*** malaria, which is affecting both health and socioeconomic development, and threatening the rapidly developing economies of several Asian countries.

A malaria eradication programme was introduced in 1955, initially with remarkable success. However the disease returned with a vengeance, reaching a peak in the mid-seventies. The difficulty of eradicating the disease led to a new approach focussing on malaria control.

In 1992 the countries of the SEAR adopted the Global Malaria Control Strategy and in 1998 seven countries in the Region endorsed the WHO Roll Back Malaria Initiative. Despite modest progress, the malaria control programmes are faced with numerous constraints and challenges. Their performance has remained poor. The problem of multi-drug resistance is expanding geographically and Asia is fast becoming the epicentre.

Clearly, malaria is not just a public health problem but a disease related to ecological, social, environmental and developmental changes. Asia has the highest proportion of people below the poverty line and malaria is perpetuating a vicious cycle of poverty from which they are unable to escape. Tragically, the malaria problem has lost its visibility due to insufficient factual information and comprehension of the full burden of disease.

In order to achieve effective and sustainable control in Asia, there needs to be a clearer understanding of malaria dynamics, the specific challenges posed by ***P. vivax*** malaria and ***P. falciparum***, a reliable estimation of the burden of disease, and a realistic mapping of the affected, including migrant, population.

Member States now need to mobilise additional funds both from within Asia and from global partners in order to scale up malaria control efforts.

1 World Health Organization

The following broad strategies are proposed during 2006-2010 for SEAR to reach the goals and targets:

- **Reform approaches to programme planning and management**
- **Revamp surveillance and strengthen monitoring and evaluation**
- **Scale up coverage and proper use of insecticide-treated mosquito nets**
- **Target interventions to risk groups**
- **Scale up control of *P. vivax* malaria**

To implement these strategies it is vital to prepare a roadmap for implementation that involves programme planning and management. This roadmap should include advocacy, planning and information exchange, mobilization of additional resources, acceleration of human resource development, strengthening of health infrastructure and development of a monitoring and evaluation framework to track the progress of programme implementation. The Malaria Control Programme should also take into consideration the ecological, behavioural and social dimensions using a multisectoral approach.

WHO accords malaria control a high priority. A Regional Technical Advisory Group (RTAG) on malaria for SEAR was established in 2004 to review the current policies, to provide strategic directions and advise on the use of appropriate and new technology for malaria control. Bi-regional collaboration is focused on monitoring drug resistance, drug quality and communications for behavioural changes targeting ethnic minorities along the international borders in the Greater Mekong Sub-region (GMS). This is achieved with the help of WHO, USAID[2], the ADB[3] and US Pharmacopoeia. The Global Fund to Fight AIDS, Tuberculosis and Malaria has approved $150 million funding for eight countries for malaria control. The World Bank has supported an enhanced malaria control programme in India. Other important partners include USAID, the UK DFID[4], JICA[5], AUSAID[6], MSF[7], the EC[8], the German Government, Malaria Consortium, and ACTMalaria[9].

Such global support for malaria control is unprecedented. Following renewed political commitment resources have started to roll in for control of malaria in Africa. Asia, with the second highest burden of malaria, should now showcase its needs through its political leadership and emphasise its commitment to poverty reduction and sustainable economic growth with a clear strategy to control poverty-related diseases like malaria, TB and HIV/AIDS.

2 US Agency for International Development
3 Asian Development Bank
4 UK Department for International Development
5 Japan International Cooperation Agency
6 Australian Agency for International Development
7 Médecins Sans Frontières
8 The European Commission
9 Asian Collaborative Training Network for Malaria

Through concerted efforts in the implementation of the revised malaria control strategy the Member countries are expected to reach the following goals, objectives and expected outcomes established for malaria control by 2010:

Goals

- **The reduction of malaria morbidity and mortality by 50% of the level in 2000 by 2010**
- **Achievement of the MDG[10] in the member countries of the Region by 2015**

Objectives

- **To increase coverage of malaria prevention among populations at risk**
- **To increase access to early diagnosis and prompt treatment (EDPT)**
- **To strengthen technical and managerial capacity of the malaria control programme and establish a mechanism for multisectoral involvement**
- **To increase visibility of malaria through advocacy in order to mobilize sufficient resources for malaria control**

Expected Outcomes by 2010

- **80% coverage of households with insecticide-treated nets or indoor residual spraying, focusing especially on populations at risk**
- **EDPT for 80% of fever patients**
- **All countries adopted and implemented Integrated Vector Management[11] (IVM) as a part of Healthy Public Policy**
- **50% reduction of *P. falciparum* case fatality rate**
- **Increased visibility and awareness of malaria in SEAR through strong, high-level political commitment**
- **Financial support for malaria control doubled from 2005 level**

10 Millennium Development Goal 6 : To have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

11 Integrated Vector Management activities test the effectiveness of vector-control methods and identify the appropriate settings in which the methods are likely to be effective, particularly in urban and rural settings

Current Situation in South-East Asia

Global Context

Although it is now found mainly in the tropics – Africa, Central and South America, tropical Asia, and parts of the Middle East – malaria was a significant cause of illness and death across the globe until about 50 years ago. Washington DC, for example, had indigenous cases as late as the 1950s. Although the disease has been eradicated from most temperate environments, it still threatens 40% of the world's population, most of whom live in very poor countries. It is estimated that at least 300-500 million people suffer from acute malaria annually and that more than a million die.

Malaria may be perennial, seasonal or sporadic, depending on the presence of vector mosquitoes. Epidemics are often associated with the movement of non-immune people into transmission areas and such outbreaks may be associated with high mortality. Malaria patterns differ from region to region. Globally, 80-90% of malaria deaths occur in tropical Africa, most of them in young children. Malaria is the single biggest infectious cause of deaths in African children, with more than 3000 children dying from this disease every day. Pregnant women and newborns are also especially susceptible to malaria. If they survive the infection, the complications of low birth weight and severe anaemia may threaten both mother and child. The incidence of neuro cognitive sequale following severe malaria is another problem. Its burden and impact are unknown.

In addition to the human toll, malaria is considered by health economists to be one of the four most common causes of poverty. People exposed to the infection may spend as much as 25% of their household income on malaria-related expenses: travel for treatment, medicines, bed nets, laboratory examinations and funerals for family members dying of the disease. Such individuals are less productive: absenteeism from jobs and debilitation resulting in inability to perform agricultural tasks are common. Children are often forced to remain at home because of illness or because of the need to replace adults performing subsistence agriculture.

Malaria is curable everywhere and it is not an inevitable consequence of poverty. Effective treatments and preventive measures are available, although they are not very expensive and yet currently reach inadequate numbers of affected populations because of ineffective health delivery systems. In recent years, new drugs and combinations and new approaches to vector control have been developed. More is now known about effective medical management of cases and experience has led to new approaches to the control of mosquito vectors. A major development occurred in 2002 with the creation of the Global Fund to Fight AIDS, TB and Malaria, a financial instrument aimed at redressing the funding gap for these devastating infections. Within two years of its inception, the Fund had allocated two billion US dollars for malaria control activities. Clearly, this amount is still grossly inadequate but it marks the first time that such amounts have become available to support national programmes in affected countries, and it bodes well for future commitments.

Interventions need to reach all populations at risk

In accordance with its mandate, at global, regional and national levels, WHO defines standards for the prevention, control and possible elimination of major diseases of international importance, including malaria. Guidance is found in the Global Malaria Control Strategy, adopted in 1992 by a Ministerial Conference on Malaria held in Amsterdam, and subsequently endorsed by the World Health Assembly and the UN General Assembly in 1993. This strategy is based on four imperatives:

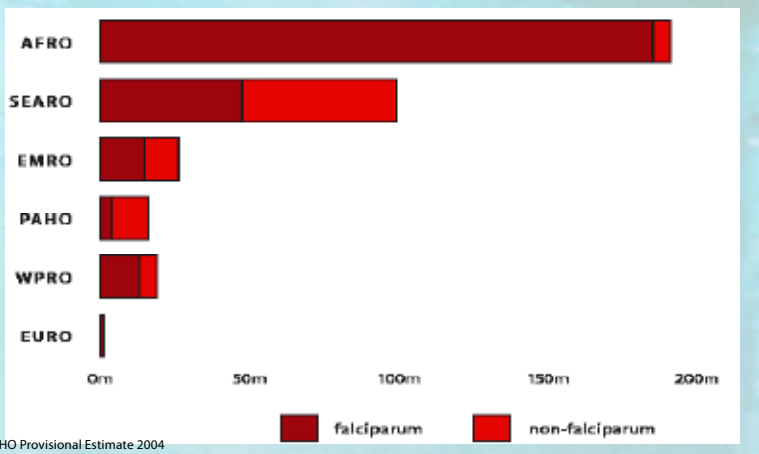
- *To provide early diagnosis and prompt treatment of malaria, wherever it occurs;*
- *To plan and implement selective and sustainable preventive measures, including vector control;*
- *To prevent, or detect early or contain malaria epidemics;*
- *To strengthen local capacity in basic and applied research to permit and promote the regular assessment of countries' malaria situation – in particular the ecological, social and economic determinants of the disease.*

The global strategy recognizes that the epidemiology of malaria varies greatly throughout the world and that control must be based on local analyses of the situation. It calls for decentralization of decision-making, for overall health sector development, increased community participation, integration of malaria control with other health programmes, and for multisectoral involvement.

South-East Asia Regional Context

Malaria remains one of the most serious problems faced by the countries of SEAR. The burden of malaria in South-East Asia is second only to Sub-Saharan Africa (Fig 1). Every year, nearly 100 million cases are estimated to occur; of which 50% are ***P. falciparum***.

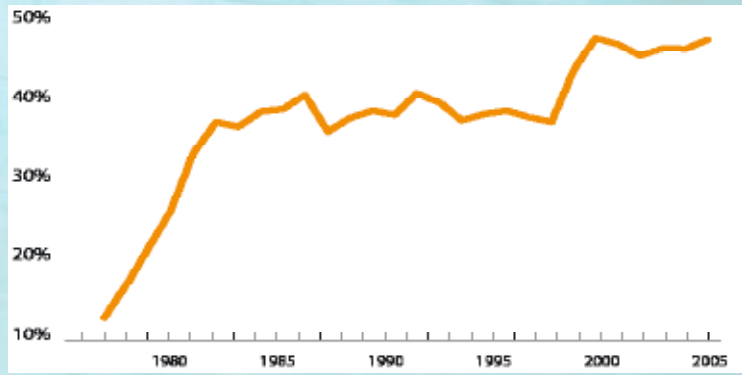
1. Global malaria situation: the regional burden – the distribution of malaria cases by WHO Regions



Source: WHO Provisional Estimate 2004

The disease is endemic in all the countries of the Region except the Maldives, which has remained free of indigenous cases since 1984. Official reporting of cases and deaths is poor and actual numbers are estimated at 10-20 times of the reported cases and deaths, indicating the critical need for improved methods of assessing the burden caused by malaria in the Region. Although significant progress has been made and declining trends in morbidity and mortality are observed, the disease remains a critical cause of continuing poverty because of ill health, decreased productivity, transportation costs and treatment expenses. The geographical distribution and overall incidence of ***P. falciparum*** is increasing (Fig. 2).

2. Trends of *P. falciparum* in SEAR 2005



Source: SEARO

The growing problem of multi-drug resistance is more severe in Asia than in any other part of the world and the Region has become the epicentre for this problem (Fig. 3).

3. Geographical distribution of drug resistant *P. falciparum* in SEAR, 2003

Focal epidemics occur due to ecological disturbance resulting from developmental projects and as a result of the large scale movement of the people to and through malaria endemic zones.

The political commitment for malaria control remains inconsistent. As a result, the resources available for malaria control remain insufficient. The capacity of the health staff to address the problem of malaria is diminishing in all the countries of the Region due to transfers, attrition and unfilled vacancies.

Overall the progress in malaria control has been modest, current efforts are faltering and the malaria situation continues to remain grim. India reports the most cases (78.2%), while Myanmar has the highest proportion of reported malaria deaths (53.7%) in 2004. Malaria in SEAR accounts for 30% of the global morbidity and 5% of mortality. All the endemic countries have continued to report outbreaks of malaria. DPR Korea, with its temperate climate, has been afflicted with relapsing malaria caused by ***P. vivax*** since 1996 after a gap of about 30 years. Although the reported morbidity and mortality due to malaria have shown a declining trend during the last seven years, the proportion of cases due to ***P. falciparum*** have increased, especially in Bangladesh, India and Indonesia.

Countries in SEAR have, no doubt, made remarkable contributions during the eradication era. They have contributed to scientific knowledge and evidence. The mortality associated with malaria has reduced dramatically. The initial gains were impressive, but resurgence of malaria has defied all efforts to control the disease effectively, and the challenges have increased. The proportion of ***P. falciparum*** malaria has increased progressively, the long incubation period of ***P. vivax*** malaria has affected DPR Korea despite its temperate climate, and multi-drug resistance in ***P. falciparum*** malaria has spread in a menacing way.

Challenges and opportunities

The level of international support for malaria control is high. The President of USA and the Prime Minister of the United Kingdom have both advocated for a drastic increase in the resources for control of HIV/AIDS, TB and malaria. The GFATM has provided substantial funds for commodities and scaling up these programmes. During the first four rounds for applications, the Fund approved USD 150 million for five years for malaria control in eight countries in SEAR. The high level of advocacy in Africa has succeeded in mobilizing funds. Central and South America have received technical and funding support from their North American neighbours. However, support to Asian countries has been inadequate.

Under-reporting of the incidence of malaria is related to the weaknesses of the surveillance system, and limitations in laboratory facilities are responsible for the large gap in reported malaria morbidity and mortality in the Region. The estimated cases of malaria of 18-20 million are at least eight times the reported cases of 2.3 million. WHO estimated in 2004 that the actual burden in the Region might be 100 million cases a year (ref: Fig 1). The reporting of mortality highlights the inaccuracies even further since the estimated mortality is about 25 times, about 100,000 estimated deaths, that of the reported mortality of 4200 deaths. This leads to poor visibility of malaria in the Region which hampers advocacy to mobilise resources. Poor and unreliable reporting also restricts the identification of 'at risk' populations and makes stratification difficult.

The coverage with indoor residual spraying (IRS) is declining. It was estimated to be about 40% for high risk populations. The poor take-up of IRS, the high costs of insecticides and resistance to insecticides are limiting the use of IRS as a vector control strategy.

The widespread use of insecticide treated mosquito nets (ITNs) is an important intervention. Even though the role of ITNs in providing personal protection and in transmission risk reduction is established and the community ownership of nets in many communities in the member countries is high, the coverage with insecticide treated nets varies from 2-20%. Poor programme management and community involvement, inadequate resources, poor involvement of the private sector and lack of policy support have constrained widespread use of ITNs. Retreatment of the nets with insecticides requires a high level of continued commitment of the community. Two types of long lasting insecticidal nets (LLINs) have been approved by WHO Pesticides Evaluation Scheme (WHOPES). This is a promising tool in vector control.

Bio-environmental control of vectors is very promising. Its costs are low and the intervention is environment friendly. It has been successfully used in India, Myanmar, Sri Lanka and Thailand. However, it requires sustained community involvement and cannot be applied on a wide scale. Rapid urbanization and developmental activities necessitate health impact assessment of large, medium and small projects. While the health impact assessment of large projects is undertaken, the medium and small projects get ignored. Integrated vector management strategy is accepted as a policy but requires operational plans and implementation as an integral part of healthy public policy.

The problem of multi-drug resistance in ***P. falciparum*** malaria has been spreading from countries in the Greater Mekong Sub-region (GMS) to Bangladesh, north eastern and eastern states in India. Accordingly, Bangladesh, Indonesia, Myanmar and Thailand have revised their policy on antimalarial drugs and recommend the use of artemisinin-based combination therapy (ACT). India has also accepted the use of combination treatment in selected areas where multi-drug resistance is a problem. The ability to recognise problems in the early stages is vital to the accurate monitoring of drug resistance in the countries of the Region.

ACTs are more expensive than treatment with chloroquine or Sulfadoxine/pyrimethamine (SP). The use of combination drugs has necessitated the application of definitive diagnosis before initiating treatment. There are serious gaps in programme management concerning quality of diagnosis and quality of drugs. The experience in GMS countries highlights the problem of sub-standard/fake drugs.

While the availability of rapid diagnostic tests for ***P. falciparum*** is very useful, availability of rapid diagnostic tests for ***P. vivax*** at affordable prices is a constraint. Even though some of the countries (Bangladesh, Bhutan, Myanmar, Indonesia, Thailand and certain areas of India) have changed their policy on antimalarial drugs, the higher cost of combination drugs, the poor quality of antimalarial drugs and global shortage are serious constraints. Outbreaks of malaria continue to affect most countries of the Region.

Advocacy for malaria has helped in the mobilization of resources but these efforts are not adequate to effectively scale up strategic interventions. Even though tools and interventions are effective for the control of malaria, the logistic, operational and technical constraints relating to programme management limit the usefulness of such interventions. The problems in programme management are being exaggerated due to the policy of decentralization in some countries of the Region due to poor capacity in the districts and provinces. The integration of malaria programmes with other vector-borne disease programmes is sometimes leading to a lack of focus on malaria as a priority.

In 1998 the Roll Back Malaria (RBM) initiative was adopted by seven countries in the Region. Partnership and community mobilization are the distinctive features of RBM strategy. WHO regional and country offices have continued their support with advocacy, information exchange, human resource development, and operational research. WHO has participated in the programme reviews in some of the countries. Since the inception of GFATM, assistance has been provided by WHO in preparing the proposals, with success in eight countries. WHO has also provided technical support to four countries in the implementation of GFATM supported projects. However, the capacity of WHO in supporting malaria control in member countries needs to be increased.

Through bi-regional collaboration WHO has mobilized several partners for addressing the malaria problem in Mekong Region. The work has highlighted the problems of multi-drug resistance and sub-standard/fake drugs. The partners like ADB, DFID, the German Government, the World Bank, USAID, JICA, UNICEF, and international NGOs such as ACTMalaria, MSF and Malaria Consortium have been providing excellent support in Asia but much more needs to be done in developing new partnerships and sustaining the existing partnerships. The partnerships with the corporate and private sectors and NGOs, and collaboration with other sectors have a lot of potential at national and local levels but remain virtually unexplored.

Rationale for the Revised Malaria Control Strategy

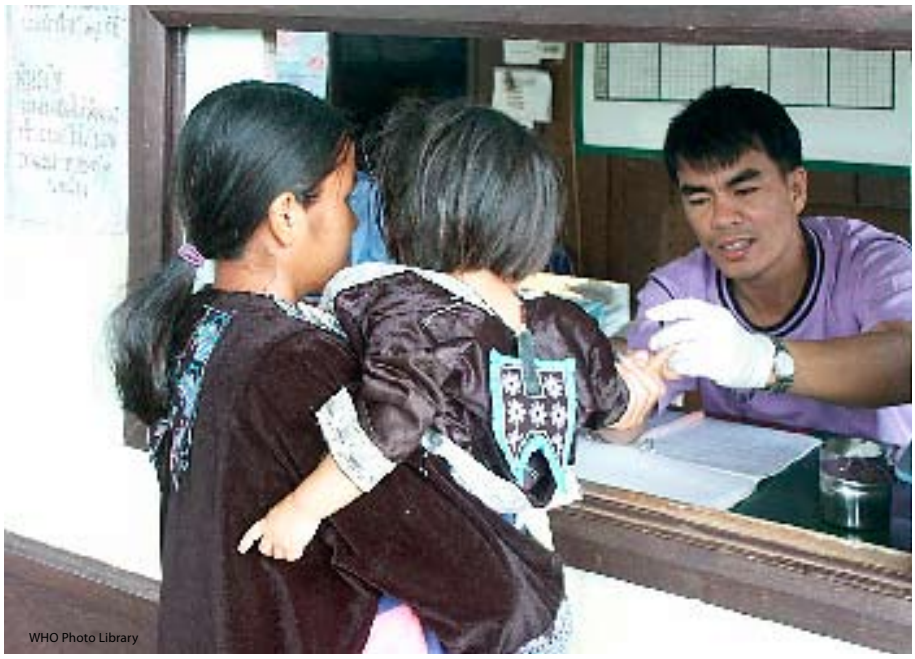
Many countries in Asia, including India and China, are witnessing unprecedented growth in their economies through rapid economic development. However the development in India and other Asian countries has been uneven. There are underdeveloped areas in Asia that match the malaria situation in Africa and are equally deserving of attention as the countries in Sub-Saharan Africa. Even though malaria related to ***P. vivax*** does not match the ***P. falciparum*** in terms of mortality, it is very debilitating and is adversely affecting productivity. There has been a relapse in the control of ***P. vivax*** malaria and this can be devastating for economic development. Rising trends in the proportion of ***P. falciparum*** malaria and the geographical spread of drug resistance are further complicating the problem. A revised strategy is needed to highlight the need to tackle the problem of malaria in areas that have lagged behind in the recent rapid growth in Asia. Sustained advocacy at the highest level is required to enhance the visibility of the problem of malaria amongst politicians and key decision makers, so that a strong and convincing case is made for mobilizing additional resources.

SEAR countries have gone through this series of anti-malaria strategies over the years. Countries in the Region have been applying malaria eradication strategies since 1955 with considerable success for some time. But a resurgence of the disease occurred in the seventies and the approach was subsequently changed to malaria control. The Global Malaria Control Strategy articulated in 1992 was endorsed by the member countries in the Region. In 1998, the Director General of WHO recommended the Roll Back Malaria initiative which retained the elements of Global Malaria Control Strategy and added partnerships and advocacy to mobilize resources.

In general, countries have been reluctant to abandon many eradication-era approaches, particularly regarding case detection and reporting. Much of the information concerning epidemiology and vector status is very old and not useful for present interventions. Integration and decentralization of control programmes have been implemented with insufficient advance planning, thereby weakening the programmes. The severe shortage of well-trained staff, especially mid-level managers and field staff, was documented in all countries. Malaria control programmes need to be reviewed and revamped.

Effective malaria control in Asia requires a clearer understanding of malaria dynamics, a realistic definition of target populations, including the mapping of migrant populations and epidemiology. Effective and sustainable malaria control can be achieved only with a reliable evidence base. Moreover, there have been technological advances, which need to be incorporated into the Strategy. Ultimately, the Strategy should be tailored to the ecological, environmental and social behavioural aspects of the Region.

In SEAR definition of at risk populations is very poor. Populations at risk of malaria should be clearly identified. For example, malaria is prevalent among ethnic groups who live along international borders, migrant populations, or, in the case of India, urban poor. Interventions should be targeted at these vulnerable and often hard to reach populations. Involvement of anthropologists and social scientists is essential as malaria in Asia is related to behavioural pattern of populations at risk. Surveillance



Early diagnosis and prompt treatment is offered through Malaria Clinics

systems need to be revamped in order to clearly understand the dynamics of the epidemiology of malaria in Asia. New approaches that will provide better evidence of the disease burden are urgently required.

The problem of ***P. vivax*** malaria, which is widespread in Asia and which is quite diverse, has been ignored until now. When mortality is the key indicator, massive malaria morbidity is overlooked, inhibiting the development and economic improvement of the most vulnerable segments of the population. Generally, the focus of malaria control programmes is ***P. falciparum*** because of the very real risk of death it presents. It is often overlooked that the clinical illness caused by the less lethal ***P. vivax*** parasite is every bit as severe and debilitating as that caused by ***P. falciparum***.

Malaria prevention requires the development and implementation of effective public health policies and community mobilization. Due to development of insecticide resistance, the increasing costs of insecticides and the need for resource intensive operations, Indoor Residual Spraying (IRS) can no longer be used as extensively. Insecticide Treated Nets (ITNs) should be scaled-up and targeted at populations at risk. Bio-environmental control should be encouraged as a multisectoral approach through Integrated Vector Management (IVM).

The availability of increased resources during the last few years has necessitated a revision of strategies to successfully scale up the malaria control efforts. Sustained partnerships and multisectoral approach are needed in prevention and control.

Malaria in Asia is different from malaria in Sub-Saharan Africa. Several global interventions are not relevant to SEAR, such as intermittent preventive treatment for pregnant women. The Region requires a new approach and a strategy that fits the Asian context.

Key elements of the revised strategy

Malaria control programmes need to be reformed

New ways to estimate the disease burden of malaria must to be established. Outdated surveillance techniques used during the eradication era need to be replaced by carefully-designed surveys. Practical and user-friendly indicators should be introduced and replace the several confusing sets of existing indicators. Programme management should be strengthened. Malaria control programmes should be responsive to the dynamics of evidence-based interventions. Malaria control programmes need to be decentralized in the absence of a strong health system, and revitalized within the context of existing health systems. Capacity building in programme planning and management will be critical. Operational research capacity should be an integral part of the programme. Additional staff with appropriate technical knowledge need to be recruited and this would only be possible through increased financial resources.

Identification of vulnerable populations

It is estimated that 85% of the malaria problem exists among ethnic minorities, other remote populations and the urban poor, as in India. There is a need to identify these populations at risk and understand clearly the epidemiology of malaria among these groups so that appropriate interventions are better targeted. A standardized definition of population at risk needs to be developed. In addition, their behavioural risk factors in relation to malaria need to be identified. This requires the involvement of experts in sociology such as social scientists and social anthropologists.

Focusing on *P. vivax*

The enormous burden imposed by ***P. vivax*** malaria in Asia and the adverse health and socio-economic and developmental consequences need to be understood and communicated. There is currently insufficient knowledge on its epidemiology, course, impact, response to drugs and effective means of control.

Balance of prevention and treatment

As the region is facing high proportion of ***P. vivax*** malaria, malaria control programmes should shift emphasis from a mainly treatment-oriented approach to a well-balanced combination of prevention and treatment.

Integrating malaria into Healthy Public Policy

Prevention of malaria should be considered as a public health issue and adopted as an integral part of Healthy Public Policy. Communities need to be mobilized for the implementation of Integrated Vector Management (IVM) strategies incorporating effective risk assessment and management. In recent years, Healthy Public Policy has

Treatment of nets can be done at community level and requires community participation

emerged as a means for promoting equity-focused social responsibility for health and safeguarding people from negative health impacts of development policies, programmes and projects. Healthy public policies are intended to create supportive environments, develop individual skills, strengthen community action, and reorient health services. The Jakarta Declaration on Health Promotion in the 21st Century (1997), and the Adelaide Recommendations on Healthy Public Policy (1998), place high priority on health and equal access to health services to all sections of the society, particularly the disadvantaged.

Integrated Vector Management strategy

Integrated Vector Management (IVM) strategy has been promoted based on selective application of various control measures which are determined by the epidemiological situation of malaria, vector biology and the socio-behavioural characteristics of the community. The SEAR has experience based on Integrated Pest Management (IPM) in agriculture, which can be emulated where relevant. The IPM programme can benefit IVM in many ways, for example, mosquito management in rice fields, water management and judicious use of insecticides in agriculture. Community mobilization for implementation and a multisectoral approach are key elements for success.

Insecticide-treated nets and indoor residual spraying

Insecticide-treated mosquito nets (ITNs) have been proven to be very effective, well-accepted and practical in several countries. However, coverage is very low at about 10%. In order to scale-up malaria control in the Region, it is critical that ITN coverage is increased to cover at least 80% of population at risk. It is essential that national authorities, other government agencies, NGOs, private sector and civil society are convinced about

the importance of promoting increased coverage of ITNs. Indoor residual spraying (IRS), which remains the mainstay of vector control measures in SEAR, should be retained and applied on a selective and complementary basis.

Partnerships and multisectoral approach

Malaria is not just a public health problem but a disease related to development, social, ecological and environmental changes. Revamping the malaria control programme, with an emphasis on partnership and multisectoral collaboration within the health and other sectors, is essential if the programme is to be more responsive to the challenges posed by changing ecology and environments.

Raising visibility of malaria in SEAR

Malaria in South-East Asia Region is different from malaria in Sub-Sahara Africa. Although malaria mortality in Asia is low compared to Africa, the burden is very high and the economic loss enormous. The Asian malaria problem has little international visibility. The disease does not receive sufficient attention and resources for the control programme are inadequate. Asian malaria needs repositioning in the global context. Strong advocacy actions should be initiated and targeted at different audiences: political, national and international, partner agencies, and civil society.

Ecological, environmental and behavioural determinants play an important role in malaria transmission

Goals, Objectives and Outcomes

Through concerted efforts in the implementation of the revised malaria control strategy the Member countries are expected to reach the following goals, objectives and expected outcomes established for malaria control by 2010:

Goals

- **The reduction of malaria morbidity and mortality by 50% of the level in 2000 by 2010**
- **Achievement of the MDG[1] in the member countries of the Region by 2015**

Objectives

- **To increase coverage of malaria prevention among populations at risk**
- **To increase access to early diagnosis and prompt treatment (EDPT)**
- **To strengthen technical and managerial capacity of the malaria control programme and establish a mechanism for multisectoral involvement**
- **To increase visibility of malaria through advocacy in order to mobilize sufficient resources for malaria control**

Expected Outcomes by 2010

- **80% coverage of households with insecticide-treated nets or indoor residual spraying, focusing especially on populations at risk**
- **EDPT for 80% of fever patients**
- **All countries adopted and implemented Integrated Vector Management[2] (IVM) as a part of Healthy Public Policy**
- **50% reduction of *P. falciparum* case fatality rate**
- **Increased visibility and awareness of malaria in SEAR through strong, high-level political commitment**
- **Financial support for malaria control doubled from 2005 level**

1 Millennium Development Goal 6 : To have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

2 Integrated Vector Management activities test the effectiveness of vector-control methods and identify the appropriate settings in which the methods are likely to be effective, particularly in urban and rural settings

Revised malaria control strategies

The following broad strategies are proposed during 2006-2010 to reach the goals and targets:

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

1. Reform approaches to programme planning and management

- Strengthen capacity of the programme through human resource development at all levels
- Strengthen expertise of regional and national centres
- Establish national board on malaria control
- Review and revise malaria control programme structure
- Improve managerial capacity
- Strengthen field supervision
- Promote operational research and translation of research into practice
- Mobilize adequate resources for malaria control through effective advocacy
- Develop a multisectoral approach and partnership with health and non-health sectors

2. Revamp surveillance and strengthen monitoring and evaluation

- Develop new ways to gather evidence of the disease burden
- Identify populations at risk
- Clarify the magnitude of the problem of malaria in special groups such as pregnant women, children, ethnic minorities
- Conduct regular epidemiological studies to understand the dynamics of malaria
- Develop new surveillance techniques and a practical set of indicators, with special attention on coverage indicators
- Involve the private sector in surveillance systems
- Establish epidemic preparedness
- Use modern information technology

- Strengthen evidence base through monitoring of drug resistance, drug quality and efficacy of vector control technology
- Implement monitoring and evaluation framework to measure overall programme management

3. Scale up coverage and proper use of insecticide-treated mosquito nets

Although it is ambitious to aim at 80% coverage of ITNs among populations at risk, malaria incidence can only be reduced through effective and high coverage of interventions. ITNs have been proven to be effective and successful in the reduction of morbidity and also mortality. Their application is one of the simplest of disease prevention tools and it is well accepted by the community. Strategic directions for scaling up ITNs:

Provision of insecticide-treated nets is the main intervention

- Improve collaboration between the public and private sectors and NGOs to increase coverage
- Target populations at risk, especially hard to reach and vulnerable groups
- Intensify communication for behavioural change to increase acceptance
- Enhance community participation in community-based treatment and retreatment of nets
- Apply effective social mobilisation and marketing techniques
- Conduct malaria campaign in SEAR to promote ITNs at regional, national and sub-national levels: 'Malaria Campaign Week'
- Mobilise resources for ITNs
- Advocate for tax exemption for nets
- Introduce long-lasting insecticidal nets in remote areas

4. Target interventions to risk groups

- Promote malaria prevention through ITNs
- Apply IRS on a selective basis in countries where IRS is in practice
- Implement IVM as part of Healthy Public Policy
- Support drug policy revision and adoption of Artemisinin-based combination therapy (ACT)
- Promote rapid diagnosis tests (RDT) and ACT package
- Map and profile high risk groups to enable improved targeting of these groups
- Involve members of these groups with social anthropologists and social scientists to devise appropriate methods of delivery and use
- Increase programme responsiveness through innovations that include outreach services, mobile malaria clinics, social mobilisation, social franchising and voucher systems
- Establish partnerships within private and NGO sectors (e.g., traditional healers, women's groups)
- Reach funding agencies through advocacy and national partnerships
- Conduct operational research to overcome existing barriers to access and identify the best practices so that these are incorporated in the national programmes

5. Scale up control of *P. vivax* malaria

- Improve epidemiologic knowledge of ***P. vivax*** malaria in Asia
- Support development of Rapid Diagnostic Tests (RDTs) for ***P. vivax***
- Regularly monitor drug sensitivity
- Support tailored national/sub-national policy development for the treatment of ***P. vivax*** malaria, both for the acute illness and for the prevention of relapse
- Scale up effective disease prevention, such as ITNs, as a means to control ***P. vivax*** malaria
- Collaborate with WHO Western Pacific Region in establishing Asia Vivax network

Key interventions for malaria control

There are two broad approaches: disease prevention and disease management. The emphasis should be placed on promoting malaria prevention for a well-balanced programme including treatment and prevention.

Disease prevention

An IVM strategy will be prepared to promote selected application of the right mix of control measures. The components of IVM comprises IRS, ITNs, bio-environmental control of mosquito larvae and health impact assessment. The selection of the strategy will be determined by the epidemiological situation, vector biology, and the socio-behavioural characteristics of the community.

Insecticide Treated Nets (ITNs)

The coverage with IRS has been declining, which exposes the population to the risk of malaria resurgence. The use of ITNs is an evidence-based effective strategy for transmission risk reduction and personal protection. The use of ITNs is recommended in moderate and high risk populations. National policies need to recognize ITNs as a public good and make ITNs tax exempt. ITNs should be provided free of charge to the poor and most vulnerable. High risk population groups such as pregnant women should be a priority. The strategy is to achieve 80% coverage with ITNs for transmission risk reduction. This would require application of a public-private strategy and a community mobilization strategy for universal access. The insecticide tablets for retreatment of the nets should be registered to permit private vendors to distribute them to the public.

Long lasting insecticidal nets (LLINs) are preferred to retreatment of nets with insecticides. Even though the initial costs of LLINs are higher than nets that are retreated regularly, in the long run LLINs are more cost effective than ITNs. However, where LLINs cannot be made available, the use of ordinary nets and their regular retreatment is recommended. Although the ownership of untreated nets in many communities is high, regular retreatment is problematic since this requires access to insecticides for retreatment and participation by the community. Until LLINs become widely available efforts will have to be intensified for retreatment of nets which would require behaviour change communication strategy and public-private partnership on a large scale.

Indoor Residual Spraying (IRS)

Indoor residual spraying will be used as a strategy for malaria control on a very selective basis in 'high risk' areas and for the control of malaria outbreaks. The selection of insecticide should be based on the information regarding the safety and efficacy of the insecticide and its cost. Environmental concerns also have to be considered in selecting the insecticide. The area for IRS should be selected based on the epidemiological information. Effective IRS programmes requre good planning and management, selection of effective safe insecticides, use of appropriate equipment, adequate coverage

and close supervision. It is necessary to ensure the safety of the spray team members. This should be done by providing standard operating procedures.

At present the coverage of selective IRS is very low and therefore does not have real impact on disease transmission. ITNs should therefore be scaled up to supplement IRS.

Bio-environmental control of mosquito larvae

Bio-environmental control of mosquito larvae is effective in certain areas. It is low cost intervention but requires community participation on a sustained basis. Although this strategy is environmentally sound, it cannot be used universally. This strategy will be effective if combined with other vector control strategies. The experiences and success stories should be documented, disseminated, expanded and applied appropriately wherever relevant.

Health impact assessment of development projects

The health impact assessment of large, medium and small developmental projects is important and should be implemented. Experience shows that health impact assessment of large developmental projects is undertaken, but medium and small sized projects are not assessed. Consequently outbreaks of malaria occur. The health impact assessment should be combined with collaboration of health departments with other sectors like agriculture, forestry, engineering, transport and mining.

Integrated vector management as a part of healthy public policy

IVM strategy has been promoted based on selected application of various control measures which are determined by the epidemiological situation of malaria, biology of vectors, socio-behavioural characteristics of community and geographical areas. IRS remains a vector control strategy whereas ITNs have been introduced as a supplementary measure or replacement if IRS is not feasible. Alternative vector control measures include bio-environmental control and personal protective measures.

Disease management

A national malaria treatment policy should include efficient methods for diagnosis, effective drug treatment, such as ACTs, quality of drugs and pricing. In SEAR the use of ACTs is strongly recommended because of growing drug resistance.

Definitive diagnosis: should be encouraged in all instances, either through microscopy or RDTs. Diagnosis of malaria by microscopy/RDT is now more important than ever before in view of the higher cost of artemisinin-based combination therapy and the increasing problem of multi-drug resistance. Prescription of antimalarial drugs based on clinical symptoms should be minimised and phased out.

Drug delivery system: Early diagnosis and effective treatment in the low and moderate risk areas can be provided as an integral part of the existing health system, but in high risk, inaccessible and poor populations, access should be enhanced through outreach malaria clinics. The outreach can also be increased by allowing community volunteers

to participate in diagnosis and treatment, and the provision of diagnosis and treatment through mobile clinics. In outreach settings and at facilities where microscopy is difficult or unreliable, RDT should be considered as a strategy. Although RDTs are available for ***P. vivax*** malaria they are not well established and the kits are also quite expensive. Migrant populations, pregnant women and children under five should be recognised as high risk/vulnerable groups and qualify for free treatment.

- *Registration of drugs, procurement policy and self regulation in the private sector will contribute to ensuring evidence-based diagnosis and treatment.*
- *Blister packaging of drugs and strategy of using treatment cards for completion of recommended treatment are important.*
- *A package of RDT and combination drugs is to be promoted in areas of drug resistant P. falciparum and where microscopy is not accessible.*

Public-private partnerships: Partnerships are needed to ensure early diagnosis and effective treatment. Social mobilisation, social franchising or voucher schemes should be considered for increasing the utilization of services by disadvantaged groups, who should get the treatment free of charge. The private health care providers and NGOs are a very important resource and already enjoy credibility in the community. Their capacity needs to be enhanced, self-regulation enforced and public-private partnerships promoted as a strategy. They are even more important and relevant in remote, poorly served and border areas where public health services often do not reach.

Presumptive treatment: The widespread use of subtherapeutic dosage of antimalarial drugs in all cases of fever as presumptive treatment is not rational in a malaria control programme as this produces unwarranted drug pressure. Not all cases of fever are caused by malaria and the credibility of the programme and the health care provider is eroded when a fever that is not caused by malaria is treated with antimalarials. The national programme should consider the application of suitable fever algorithms for fever treatment.

Secondary and tertiary health care in clinical management: There is a need to strengthen capacity of doctors and paramedics in clinical management of cases at secondary and tertiary care in order to reduce mortality. An effective referral system should be established. Innovative tools for life saving treatment such as rectal artesunate and stand-by drugs should be considered in remote areas and where referral systems do not exist.

Roadmap for planning and programming

- The regional strategy should be used by the member countries to prepare national technical guidelines, national policy that takes into account the country situation and the existing technical, operational and programme management constraints as well as the lessons learnt.
- A multidisciplinary coordination committee should be constituted to facilitate the policy and strategy framework. This committee should develop harmonized work plans with detailed costing.
- For developing detailed work plans and consensus, consultations should be carried out with the private sector, NGOs, academic institutions and with industry for procuring insecticides, nets, drugs, diagnostics and equipment.

Human Resource development is an integral part of the Revised Malaria Control Strategy

- The plans should be result-oriented and a monitoring and evaluation plan for tracking progress should be included. The work plans should follow a log frame model to reflect the expected outcomes and products. These should be measured by verifiable indicators.
- The work plans should include specific timelines for activities and detailed costing. Gaps in resources have to be identified.
- An inter-country cooperation mechanism is recommended to allow contributions based on comparative advantage. The inter-country cooperation would also be useful in developing a common understanding and facilitating information exchange to address cross border problems.
- Sustained commitment of the national governments, reflected by medium and long term planning and sustainable financing, is required if the targets and goals are to be reached.

Raising the profile of malaria in the Region

Malaria in the Region needs repositioning in the global and national contexts, beginning with re-analysis of available information and improved surveillance methodology. Among communicable diseases, malaria should receive better attention and political support from Heads of member States. The primary purpose is to ensure that sufficient resources for malaria control are allocated and available on a sustained basis in member states.

Malaria is a socio-economic and developmental problem in the Region

- Update information and analysis of the situation particularly regarding the extent of morbidity
- Demonstrate economic impact and implications of malaria in the SEAR
- Develop an advocacy plan and materials for different key audiences
- Involve professional advocacy experts at regional and country levels
- Identify clear messages for each target audience
- Document lessons learned and success stories of malaria in the SEAR
- Engage the Association of South-East Asian Nations (ASEAN), and South Asian Association for Regional Cooperation (SAARC)
- Identify and promote "malaria activists"
- Advocate the revised strategy for malaria in SEAR in all fora

Available tools for malaria control and status of implementation in SEAR

Over the past decade, there have been several innovative tools and new programme approaches for malaria control, such as:

TOOLS FOR MALARIA CONTROL	STATUS OF IMPLEMENTATION
Insecticide Treated Net (ITN)	Initiated in all member countries. Coverage is generally low (10%). Treated Net coverage among population at risk is unknown.
Long-lasting Insecticidal Net (LLIN) – two products are endorsed by WHO and there are several insecticide treated materials under review by WHO	Specially recommended by WHO to be used in remote areas where retreatment of nets is not feasible. It was initiated in several countries but on a small scale. There was a global shortage of two products endorsed by WHOPES (Olyset® and Permanet II®). However, it is expected that global supply will increase significantly in 2006.
New drugs and combinations such as several Artemisinin-based combination therapies (ACT) which are now available and in the pipeline ACT is required in multi-drug resistant malaria areas, especially Thailand, Myanmar, Bangladesh and some states of India	Drug policy changed and ACT introduced in Myanmar, Thailand, Bangladesh, Indonesia, Bhutan but coverage is low due to lack of funds. India is now adopting ACTs but only on small scale. Nepal and Timor Leste are revising national drug policy to adopt ACT.
Rectal artesunate for life saving in remote areas	Product is available but not popular due to Asian culture and health system.
Intermittent preventive treatment (IPT) and Intermittent preventive treatment for infants (IPTi)	These interventions are not applicable in the Region. Study on burden of malaria in pregnancy is being conducted in Bangladesh, India, Indonesia and Myanmar. Preliminary results show that burden in pregnancy is generally low. IPT may not be applied but personal protection such as treated nets should be encouraged for pregnant women.
Several rapid diagnostic tests (RDT) that are now available	RDTs have been introduced but are considered costly in many countries and unsustainable. Quality of RDTs is a big concern. Quality Control system needs to be set up if RDTs are to be applied. RDTs for *p.vivax* are not well established.

TOOLS FOR MALARIA CONTROL	STATUS OF IMPLEMENTATION
Pre-packaged blister pack of ACT incorporated with RDTs	There have been good lessons learned from Cambodia. Myanmar is preparing to implement this technique but there is some difficulty in product registration.
User-friendly Minilab® test kits for field application to detect fake/substandard antimalarials	This is a promising product and price is affordable. It has been applied successfully in Mekong countries such as Myanmar and Thailand in SEAR.
Integrated Pest Management (IPM) has been successful in agriculture. In malaria control Integrated Vector Management (IVM) can learn from the IPM experience	IVM approach is a part of "Healthy Public Policy." IVM framework document for SEAR has been developed and should be endorsed in 2006. Two countries are expected to initiate this approach in 2006, India and Sri Lanka or Indonesia.
New computer software for improving surveillance and epidemics preparedness	In most countries, the health information system is relatively weak and there is a lack of computer facilities. Only a few countries have applied this software.
Training modules and questionnaires for special surveys such as malaria indicator survey, household survey, health facility survey are available for assessing malaria burden in the Region	It is important to have better evidence for malaria mortality and morbidity in order to properly monitor programme implementation and resource allocation. None of the countries in the Region have started due to lack of funding and capacity.
Innovative techniques such as 'Communications for Behavioural Impact' (COMBI) which has been proved effective in dengue haemorrhagic fever control	It has not been implemented under the Malaria Control Programme in the Region.
Roll Back Malaria's main concept on partnership: intersectoral, interagency collaboration and full community participation	The member countries adopted the RBM approach but the implementation is slow. Involvement of private sector and NGOs in malaria control is poor. Malaria Control Programmes in the Region are government-based and relatively vertical. There is a need for paradigm shift.

Sustainable partnerships to enhance access to prevention and treatment of populations most affected by malaria

Malaria is not just a public health problem but it is closely related to socio-economic, political, ecological and environmental changes. Rapid uncontrolled urbanization, developmental projects such as dam and road construction, deforestation and reforestation create favourable conditions for mosquito vectors. Its effective control depends on the behaviour of the people and their participation in prevention and control.

The climate for global and regional partnerships has never before been so favourable. Advantage should be taken of the commitment and interest in the global community. There are several international partners including international NGOs. These partnerships need to be sustained and new partnerships forged.

At the national and local levels, partnerships are needed both within and outside the health sector for effective malaria control. The partnerships can be sustained if there is common cause, concern and commitment and if there is ongoing communication. Partners can contribute according to their comparative advantage - what they can do best.

For enunciation and implementation of a healthy public policy and integrated vector management, the involvement of social scientists, behavioural scientists, environmental experts, media and communication experts is necessary in planning the strategy, programme design, clear behaviour objectives and the right mix of communication strategies to produce impact.

School children, and those who are out of school, have to be involved through partnerships with education departments. Revision of school curricula and involvement of teachers is an important entry point to considerably enlarging the scope of prevention and control. The number of children going to the schools and educational institutes is increasing in the member countries and the students are a captive population at an impressionable age when habits once acquired are practiced throughout life.

Malaria prevention and control is one part of corporate social responsibility as it makes business sense to keep the workforce free of malaria to sustain and enhance productivity. Partnerships with the corporate sector, especially those located in malarious areas, and the involvement of government departments that have a large workforce, like the railways and defence, is important.

The success and sustainability of malaria prevention and control depends on partnerships with researchers and academics. The programme has to be backed strongly by operational research. Research should be continued on diagnostics, treatment, ITNs and other important areas to support the programme and its quality.

Accelerate human resource development for malaria control

Human resources to support the development of a malaria control programme need to be expanded. This means staff, both full time or volunteers, their distribution, current capacity, will need to be in place to sustain the programme and respond to the additional demands necessitated by programme expansion. The problems faced by the malaria programme are related to attrition, the large number of vacancies, transfers and missing health care providers, especially in areas where the terrain is difficult or the access is poor. The programme has to deal with competing demands from other programmes since malaria is a part of basic health services. Therefore human resource development is to be viewed in the larger context of a Vector-Borne Diseases Control Programme and health care delivery system, rather than malaria in isolation.

Human resource development would require WHO support to provide standards and standard operating procedures, generic training guidelines, and training of key trainers. The training should be institutionalised to build the capacity of the staff to be able to handle the increasing complexity of the institutional environment. The success of human resource development efforts would depend largely on the building of managerial capacity and training of key persons in leadership and strategic management. For a successful public-private partnership the health care providers in the private sector have to be involved in capacity development.

- Prepare comprehensive plans to build human resources based on the needs and current job descriptions
- Obtain assistance and collaboration from regional and sub-regional organizations like ACTMalaria, WHO collaborating centres and national centres of excellence in development of human resources
- Focus capacity development through training on important areas such as social and community mobilization, skills in programme management, addressing multi-drug resistance and capacity development in operational research.
- Ensure that important components of malaria control are an integral part of pre-service training of doctors, nurses and paramedics
- The national human resource development policy should take into account the problems relating to attrition, frequent transfers and missing staff.

Suggested core indicators for monitoring and evaluating the implementation of The Revised Malaria Control Strategy

Key indicators

- **No of confirmed cases of malaria diagnosed and treated**
- **Proportion of fever cases received timely effective treatment**
- **Malaria case rate**
- **No of malaria deaths**
- **Malaria death rate**
- **Falciparum case fatality rate**
- **Number of households covered with ITNs**
- **Proportion of households with at least one ITN**
- **Number of households sprayed**
- **Proportion of households covered by IRS**
- **Proportion of malaria risk population targeted for and protected by IRS**
- **Number of malaria outbreaks reported and controlled**
- **Proportion of malaria epidemics timely detected and appropriately controlled**

The information on the above indicators should be reported in a standard format to reflect the following:

- Proportion of fever cases with confirmed malaria in the outreach clinics, mobile clinics and health facilities (government, private and NGO)
- Number of cases of confirmed malaria (***P. vivax*** or ***P. falciparum***) according to age and gender
- Number of cases of confirmed malaria in pregnant women
- Proportion of cases given effective treatment according to the national drug policy
- Number of cases of severe malaria admitted to the hospital/health centres
- Proportion of deaths amongst severe cases of malaria admitted to hospitals for treatment
- Case fatality rates (number of deaths/number of ***P. falciparum*** cases)
- Number of people who visit the health facilities (hospitals/health centres) who used an ITN the previous day.
- Number of people visiting the outreach facilities who used an ITN the previous day
- Number of women attending the antenatal services who used an ITN the previous day
- Number of children attending the outreach facilities for immunization or nutrition advice who slept under an ITN the previous day.

The above mentioned information should be collected from the health care providers in the public health sector, who are working in the health facilities/hospitals at different levels of health care. It should also be collected from private health care workers such as pharmacists or treatment providers, from nursing homes and private hospitals, and from NGOs.

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SEAR goals and objectives

Our aim is to reduce morbidity and mortality due to malaria and improve the quality of life of those affected by the disease, and to contribute to the health agenda and the mitigation of poverty in the countries of SEAR.

The target is to reduce malaria morbidity and mortality by 50% based on 2000 levels by the year 2010, and to achieve the relevant Millennium Development Goal i.e. to have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.

We plan to achieve this by:

- *increasing coverage of malaria prevention among populations at risk*
- *increasing access to early diagnosis and prompt treatment (EDPT)*
- *strengthening the technical and managerial capacity of the malaria control programme and establishing a mechanism for multisectoral involvement*
- *increasing the visibility of malaria through advocacy in order to mobilize sufficient resources for malaria control.*

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