

# Regional Strategic Plan for Malaria in the Americas 2006 - 2010

**Pan American  
Health  
Organization**

Regional Office of the  
World Health Organization

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To all who provided inputs in the process of conceptualizing, developing and consolidating the Regional Strategic Plan for Malaria, including the institutions they represent, the PAHO Regional Malaria Program extends its sincerest gratitude.

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# Contents

Message from the Director .....	i
Message from the Communicable Disease Unit .....	ii
Foreword .....	iii
1. Introduction .....	1
2. PAHO's Mandate and Regional Commitment .....	5
3. The Malaria Challenge in the Region .....	11
4. The Malaria Plan: Components and Priorities .....	23
5. Institutional Implications on the Regional Malaria Program .....	35
6. Implementation, Monitoring, and Evaluation: PAHO'S Logical Framework for Fulfilling Its Global, Regional, and National Commitments on Malaria .....	43
7. Framework for Technical Cooperation: Priority Line of Activities of the Regional Malaria Program .....	55
Annexes .....	59
Annex A: Causes of Persistence of Malaria Transmission in the 21 Countries: 2000 – 2004 .....	61
Annex B: The Regional Malaria Program Coordination Chart .....	67
Annex C: Participants in the Consultation on the Regional Strategic Plan for Malaria .....	69
Acronyms .....	73

## Graphs and Tables

Figure 1: Population of the Americas according to Level of Transmission Risk, 1998-2004 (in thousands) .....	12
Figure 2: Malaria in the Americas by Parasite Species, 1959-2004: Number of Cases .....	12
Figure 3: Malaria Morbidity in the Americas, 1998-2004: Number of Positive Blood Slides .....	13
Figure 4: Malaria Mortality in the Americas, 1998-2004: Number of Deaths .....	13
Figure 5: Malaria Morbidity in the Americas by Subregion, 1998-2004: Number of Positive Blood Slides .....	14
Figure 6: Malaria Mortality in the Americas by Subregion, 1998-2004: Number of Deaths .....	14
Figure 7: Americas: Passive vs. Active Case Detection, 1998-2004: (% of Blood Slides Examined) .....	16
Figure 8: Antimalarial Drugs Used in the Americas, 1998-2004 .....	17
Figure 9: Malaria Cases and Expenditure in the Americas, 2000-2004 .....	20
Figure 10: Malaria Cases and Expenditure per capita at Risk in the Americas, 2000-2004 .....	21
Table 1: Percent change in number of cases reported, 2000 vs. 2004: By Country .....	15
Table 2: Mosquito Vectors of Malaria by Country .....	17
Table 3: WHO's Challenges to Health vis a vis PAHO's Malaria Plan Programmatic Adjustments .....	36

## Message from the Director

Malaria is one of the diseases that continues to cause significant harm to public health and human productivity in many parts of the world including the Americas. Despite many medical breakthroughs and advances in the past few decades, the disease persists to afflict an estimated 350 to 500 million people worldwide annually. While only about a million of these cases are reported from the Americas, the real tragedy of the situation is that the disease is preventable and that treatment is available. Consistent with the Pan American Sanitary Bureau's (PASB) values, vision, and mission; and the Pan American Health Organization's (PAHO) fundamental purpose, we take the lead in coordinating the efforts to combat malaria in the Americas.

Five years since the region officially adopted the objectives of the Roll Back Malaria Initiative and commenced its intensified battle against the disease, PAHO has made considerable progress in its work. The strategies implemented by PAHO from the year 2000 to 2005, which are parallel to the 1992 Global Malaria Control Strategy (GMCS), have resulted in a number of successful collaborations and partnerships. These include (a) the Amazon Network for the Surveillance of Antimalarial Drug Resistance (RAVREDA)/Amazon Malaria Initiative (AMI) which covers 8 nations in the Amazon region with financial support of the United States Agency for International Development (USAID); (b) the approval of and the successful use of funds allocated for the joint Andean proposal (Colombia, Ecuador, Peru, and Venezuela) and individual country proposals for Bolivia, Guatemala, Guyana, Haiti, Honduras, Nicaragua, and Suriname by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); (c) the Global Environment Facility/U.N. Environmental Program-funded efforts for the prevention of the reintroduction of DDT use in malaria vector control in Mexico and Central America; and (d) research in collaboration with the World Bank, United Nations Development Program, and the WHO Program for Research and Training in Tropical Diseases.

As we reach the middle point of the decade to Roll Back Malaria (2001 to 2010) and acquire greater wisdom regarding the challenges that lie ahead, PAHO re-examines its strategic orientations and directions on malaria. With the development and consolidation of this plan, the continuous support of all the nations in the region, and the untiring involvement of every sector, I am confident that we will not only reach the target of reducing the burden of malaria in the Americas but that equity and social justice will prevail in the attainment of the desired results as we reach those areas and population groups most affected.

**Dr. Mirta Roses Periago**  
Director, Pan American Health Organization

## Message from the Communicable Disease Unit

The development of the 2006 – 2010 Regional Strategic Plan for Malaria in the Americas is an important step for communicable disease work in the region. While it specifically focuses on malaria, this document effectively demonstrates the general thrust of the Pan American Health Organization of advocating inter-sectoral and inter-programmatic collaborations. The plan provides a comprehensive analysis of the regional, sub-regional, and national situations; takes into serious account the strengths and weaknesses of existing institutions; and offers concrete and realistic solutions.

I commend the efforts of all countries and partner institutions whose work and insights contributed profoundly in the consolidation of this plan particularly the United States Agency for International Development (USAID), the US Centers for Disease Control and Prevention (CDC), the US Pharmacopeia (USP), and the Management Sciences for Health (MSH). Likewise, I salute the resilience and dedication of our colleagues in carrying out their mission. It is our hope that we will continue and further intensify our cooperation so that we will maintain our standards of excellence and relevance in meeting our commitments, bringing forth health and well-being to our constituents timely and competently.

As I have done in the past, I challenge us to think outside the box so that we remain pro-active to an ever evolving challenge of disease prevention, control and elimination.

**Dr. John Patrick Ehrenberg**  
Chief, Communicable Disease Unit  
Area of Health Surveillance and Disease Management  
Pan American Health Organization



## Foreword

There have been many challenges in the development and consolidation of this Regional Strategic Plan for Malaria which focuses on the 2006-2010 period. It takes into account the need for continuous efforts to achieve specific goals as well as the reduction of the burden on human health and the negative social and economic effects of the disease among the most affected population groups. Nevertheless, there is consensus that:

- Strategies must be of optimum relevance to the realities of the malaria situation in the region and among its member territories.
- Strategies must be supported by the best available evidence and should be in the best possible alignment with and responsiveness to the specificities in the different levels of work – global, regional, sub-regional, and national.
- Strategies must be designed according to objectives and expected results that are specific, measurable, achievable, relevant, and time-bound.

Despite numerous impediments, the task is successfully completed through the selfless contribution of various partners and colleagues in the region. This document provides a synthesis of what PAHO commits itself to focus on in the next five years and beyond; and a framework for countries and other stakeholders to consider in their work to combat malaria in the endemic areas as well as to prevent its reintroduction in countries where it has been eliminated.

As valuable as it may seem, it must be emphasized that only one part of the task is accomplished. Of equal importance, if not more, is the second part of the challenge – the need for an unwavering resolve to implement the plan. The hemisphere can only become malaria-free when persons at risk have access to malaria diagnosis, appropriate treatment, interventions to prevent malaria transmission, and sufficient health service coverage. These conditions can only be achieved if strategies are coupled with concrete actions and an enduring commitment.

Together with all PAHO member states, we will scale-up in our mission to combat and triumph over malaria.

**Dr. Keith H. Carter**

Regional Advisor on Malaria

Area of Health Surveillance and Disease Management/Communicable Disease Unit

Pan American Health Organization





# Introduction

Malaria transmission occurred throughout the Americas during the early years of the twentieth century. It was among the most prevalent infectious diseases during that period that provoked the resolution made at the Second International Conference of American States held in Mexico in January 1902 that recommended the convening of the different health organization representatives from the various American countries. The convention held in Washington DC in December 1902 was the predecessor of the current Pan American Health Organization.

At the 11th Pan American Sanitary Conference held in 1942, malaria was identified as the disease that causes the most harm to the greater number of nations of the Americas. The Malaria Committee of the Pan American Sanitary Bureau was recommended to become the consulting group for the implementation of survey and malaria control programs in the continent. Since the formal undertaking of that role in 1948, great success was attained in reducing the incidence of malaria and even eliminating transmission in some areas. That led to the call for and the charging of the Pan American Sanitary Bureau to lend support and coordinate efforts for the eradication of the disease in the Americas at the 14th Pan American Sanitary Conference in 1954. Subsequently, in May 1955, a global campaign to eradicate malaria was approved at the 8th World Health Assembly in Mexico.

In 1949, the Pan American Health Organization (PAHO) agreed to function as the Regional Committee of the World Health Organization (WHO) for the Americas. In its constitution, PAHO proclaims its fundamental purpose “to promote and coordinate efforts of countries of the Western Hemisphere to combat disease, lengthen life, and promote physical and mental health of the people.”

**“We are one with the world in the objective to halve the global burden of malaria by 2010 (Roll Back Malaria, 1998) and inherently reverse its incidence by 2015 (UN Millennium Development Goals, 2000).”**

Throughout the changes in the approach to the global battle against malaria, which shifted focus from eradication to control and adopted the Global Malaria Control Strategy in 1992, PAHO has been in the forefront cooperating with member states in combating malaria in the Americas. Over the last two decades, PAHO has approved strategic and programmatic orientations to guide technical cooperation on various concerns with and among member states. This document hereafter referred to as the Malaria Plan, is consolidated and developed specifically for PAHO's Malaria Program. It supplements and complements PAHO's Strategic Plan and defines the focus of the Malaria Program in the region and guides the programming of technical cooperation at the country level for the period 2006-2010. Specifically, the Malaria Plan:

- Clarifies PAHO's mandate, role and commitment in combating malaria in the Americas;
- Provides a comprehensive analysis of the malaria situation in the region in the light of recent global efforts and objectives of direct relevance to malaria and in the context of the strategies employed for the region since the year 2000;
- Identifies and prioritizes areas of technical cooperation and sets objectives/parameters by which the Malaria Program will be evaluated;
- Probes on the institutional implications of the identified plan components and priorities;
- Presents a general framework on the implementation, monitoring, and evaluation of the plan; and
- Outlines priority activities for the Regional Malaria Program for the period 2006-2010

Through the Malaria Plan, the allocation and use of PAHO's resources in malaria-related endeavors will be maximized and used most effectively. The policy and programmatic orientations presented can serve as useful reference for member states and partner institutions in the development of shared efforts and collaboration on malaria prevention and control in the Region.





# PAHO's Mandate and Regional Commitment

PAHO's regional mandate in combating malaria has its roots in the historical role of the Organization in fighting the spread of pestilence and disease in the Americas. Apart from the general mandate of PAHO to improve the over-all health in the region, as provided by various international bodies and institutions such as the United Nations, the World Health Organization, and the Organization of American States, a number of international and regional conferences and initiatives have made resolutions that emphasize the vital role of PAHO in the battle against malaria. In recent years, several significant objectives and initiatives relevant to the global malaria problem has affirmed PAHO's role in the challenge of malaria in the Americas. The following specific objectives, initiatives, and resolutions form the basis for the development of and the setting of priorities under the Malaria Plan:

- The United Nations Millennium Development Goals (September 2000)
  - Halt and begin to reverse the incidence of malaria (and other major diseases) by 2015
  
- The Roll Back Malaria (RBM) Initiative (October 1998)
  - Halve the malaria burden in participating countries through interventions that are adapted to local needs and reinforcement of the health sector by 2010
  
- The Global Malaria Control Strategy (GMCS) (October 1992)
  - Provide early diagnosis and prompt treatment;
  - Plan and implement selective and sustainable preventive measures, including vector control;
  - Detect early, contain or prevent epidemics;

**“We profoundly value our mandate and we remain unwavering in our commitment.”**

- Strengthen local capacities in basic and applied research to permit and promote the regular assessment of a country's malaria situation, in particular the ecological, social, and economic determinants of the disease.
  
- Resolutions made in the recent World Health Assemblies and various meetings and conferences of WHO and PAHO
  - 46th PAHO Directing Council Resolution: Malaria and the Internationally Agreed-Upon Development Goals, Including Those Contained in the Millennium Declaration (CD46.R.13; September 30, 2005)
    - Continue providing technical cooperation and coordinating efforts to reduce malaria in endemic countries and to prevent reintroduction of transmission where this has been achieved;
    - Develop and support mechanisms for monitoring the progress of malaria prevention and control and report on a regular basis;
    - Assist Member States, as appropriate, to develop and implement effective and efficient mechanisms for resource mobilization and utilization;
    - Initiate and support sub-regional and inter-country initiatives aimed at prevention and control of malaria among mobile populations, as well as in areas of common epidemiologic interest, particularly those in border areas;
    - Assist Member States, as appropriate, in the implementation of projects financed by the Global Fund to Fight AIDS, Tuberculosis, and Malaria;
    - Foster and support research to develop vaccines, new insecticides, and more effective drugs to fight malaria.
  
  - 58th World Health Assembly: Malaria Control (WHA58.2; May 23, 2005) / 115th Session of the Executive Board: Malaria (EB115.R14; January 24, 2005)
    - Reinforce and expand the Secretariat's work to improve existing national capabilities, and to cooperate with Member States, in collaboration with Roll Back Malaria partners, in order to ensure the full and cost-effective use of increased financial resources for achieving international goals and targets, including the internationally agreed development goals related to malaria contained in the United Nations Millennium Declaration;



- Collaborate with malaria-affected countries and Roll Back Malaria partners, as well as malaria-free countries facing a real risk of re-emergence, to ensure that countries receive full support for necessary monitoring and evaluation, including the development and implementation of appropriate pharmacovigilance systems;
  - Collaborate with Roll Back Malaria partners, industry, and development agencies in order to ensure that sufficient quantities of insecticide-treated mosquito nets and effective antimalarial medicines are made available, especially those required for combination therapies, for example by studying the possibility of WHO undertaking bulk purchases on behalf of Member States who so desire, noting the need for strictly controlled distribution systems for antimalarial medicines;
  - Provide evidence-based advice to Member States on the appropriate use of indoor residual insecticide spraying, taking into account recent experiences around the world;
  - Strengthen collaboration with partners in industry and academia for development of affordable high-quality products for malaria control, including rapid, easy-to-use, sensitive and specific diagnostic tests; an effective malaria vaccine; novel, effective and safe antimalarial medicines; and new and environmentally-friendly insecticides and delivery modes to enhance effectiveness and delay the onset of resistance;
  - Provide support for inter-country collaboration to control malaria, in particular, where there is a risk of spread across shared borders;
  - Further promote cooperation and partnership between countries supporting malaria control programs in order to ensure that funds available to combat the disease are used efficiently and effectively.
- 26th Pan American Sanitary Conference: AIDS in the Americas (CSP26.R12; September 23 - 27, 2002)
    - Develop a regional strategic framework that supports and strengthens technical cooperation with the Member States and promotes better utilization of new global and regional opportunities, such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria; the initiative for accelerated access to antiretroviral drugs; the Global Health-Sector Strategy; and sub-regional cooperation among countries, within the framework of the interagency collaboration promoted by the United Nations.

- 42nd PAHO Directing Council Resolutions: Roll Back Malaria in the Region of the Americas (CD42.R15; September 25-29, 2000)
  - Urge the Member States to formalize the adoption of the Roll Back Malaria initiative in territories where malaria still constitutes a public health problem; and make a commitment to perform an annual evaluation of progress in the different areas of the initiative, until malaria is eliminated as a public health problem in the region;
  - Continue to support the mechanisms for monitoring the progress of prevention and control programs;
  - Support the efforts aimed at mobilizing the necessary resources for the elimination of malaria in the region.
- 52nd World Health Assembly: Roll Back Malaria(WHA52.11; May 24, 1999)
  - Promote harmonized strategies and encourage consistent technical guidance for efforts to roll back malaria;
  - Work with them (Member States) as they establish the criteria for success in rolling back malaria, and monitoring progress of country and global efforts within the context of health sector and human development;
  - Promote international investment in cost-effective new approaches and products through focused support for research and for strategic public and private initiatives;
  - Broker the technical and financial support that is required for success;
  - Report regularly on progress of the global Roll Back Malaria partnership to the Executive Board and the Health Assembly, stressing the contribution that Roll Back Malaria makes to the reduction of poverty, and reviewing the extent to which the partnership serves as a pathfinder for effective joint action on other international health issues;
  - Promote the aims and outcomes of the Roll Back Malaria partnership in relevant intergovernmental bodies, organizations of the United Nations system, and - when appropriate - other bodies committed to equitable human development.

Analysis of PAHO's mandate as an institution and the specific objectives and resolutions relevant to the status of malaria in the Americas indicates general areas of concern, issues, and priorities to which the region is committed: malaria prevention, surveillance, and early detection and containment of epidemics; integrated vector management; malaria diagnosis and treat-

ment; enabling environment for malaria prevention and control; and health-systems strengthening/country-level capacity building. Significantly, similar focus is emphasized by the Global Malaria Control Strategy (GMCS) and the Roll Back Malaria (RBM) Initiative.



# The Malaria Challenge in the Region: Context and Environment for the Development and Execution of the Malaria Plan

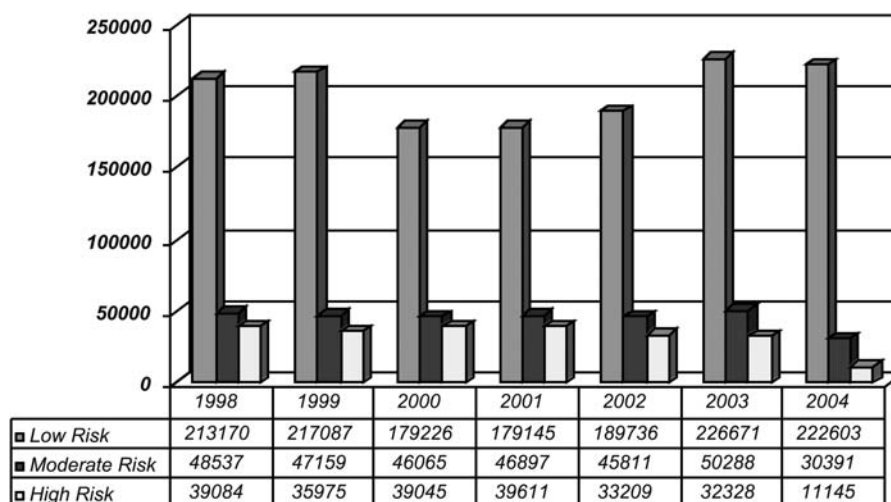
A comprehensive understanding of the context and environment on which the problem of malaria persists in the Americas is essential in the design of a relevant and effective Malaria Plan. This section presents an analysis of the different aspects in the context of the malaria challenge in the region. The annual report on malaria provided to PAHO by the health departments/ministries of the various member states from 2000 to 2004 are used as the principal source of data in understanding the context and environment that causes the persistence of malaria transmission in the region. Discussed herein are the epidemiological, socio-political, economic, behavioral, environmental, educational, administrative, and policy dimensions of malaria in the Americas.

## Epidemiologic Patterns

In 2004, PAHO Member States indicated that of the estimated 869 million inhabitants of the Americas, approximately 264 million live in areas at ecological risk of malaria transmission. Of those, approximately 223 million live in areas at low or extremely low levels of risk (< 1 case per 1000 population); 30 million in areas of moderate risk ( $\geq 1$  but less than 10 cases per 1000 population); and 11 million at high risk ( $\geq 10$  cases per 1000 population) (Figure 1). These figures mean that approximately 3 out of every 10 persons in the Region of the Americas and the Caribbean still continue to be at varying degrees of risk of malaria transmission. At present, malaria remains a public health problem in the Region with transmission reported in 21 of the PAHO Member States.

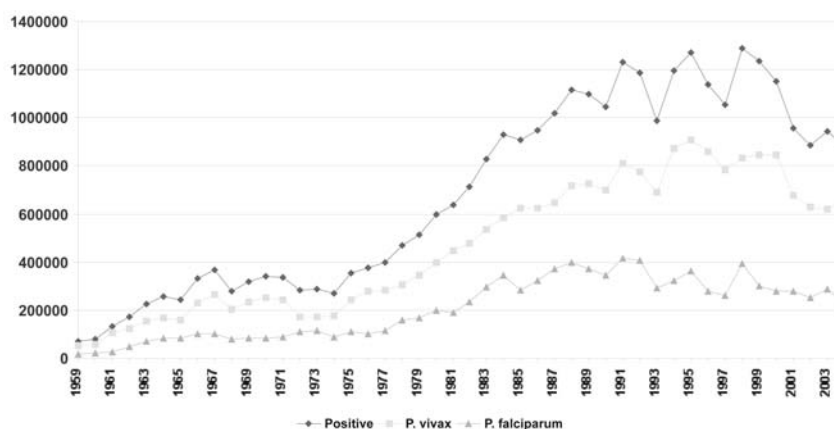
**“We are dedicated to the understanding of the malaria burden and all its facets ...”**

**Figure 1: Population of the Americas according to Level of Transmission Risk, 1998-2004 (in thousands)**



Despite lingering problems in the health information systems that makes underreporting of cases extremely likely, information on the annual number of cases by malaria parasite has been reported by Member States to the Secretariat since 1959. By 1963 over 200,000 cases were reported; that number quadrupled by 1983 and continued increasing to over 1 million cases in 1987. In 1998, the number of cases peaked at 1.3 million making the global launching of the Roll Back Malaria (RBM) Initiative during the same year very timely. By the time the region officially adopted the RBM Initiative in the year 2000, morbidity due to malaria was reported as 1,150,103 cases (Figure 2).

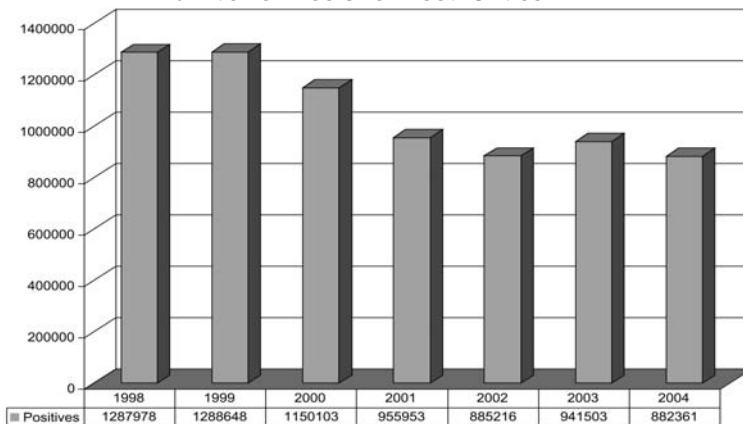
**Figure 2: Malaria in the Americas by Parasite Species, 1959-2004 Number of Cases**



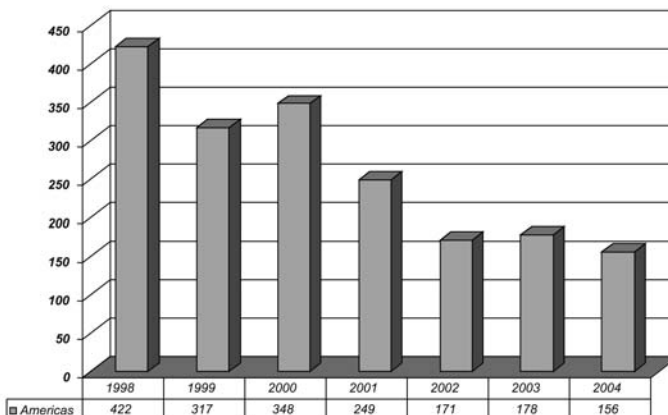
*Plasmodium vivax* is the leading cause of malaria in the region, accounting for 74% of all cases; *P. falciparum* was the cause of 25.6% and *P. malariae* less than 0.4% of all cases. In the countries sharing the Amazon rain forest, similar proportions are observed at the country level with the exception of those in the Guyana Shield (French Guiana, Guyana and Suriname). In Mexico and Central America, *P. vivax* accounts for 94% of the cases, but in the Dominican Republic and Haiti almost 100% of the cases are due to *P. falciparum*.

The burden of malaria reported in the Americas by Member States decreased from 1,150,103 cases and 348 deaths in the year 2000 to 882,361 cases and 156 deaths in 2004. This reflects a 23.3% reduction in the absolute number of cases in the region and a 55% decrease in the over-all number of malaria attributed deaths during the last 5 years (Figures 3 and 4). The case fatality rate due to *P. falciparum* in the region decreased from 13 per 10,000 cases in 2000 to 7 per 10,000 in 2004.

**Figure 3: Malaria Morbidity in the Americas, 1998-2004**  
Number of Positive Blood Slides

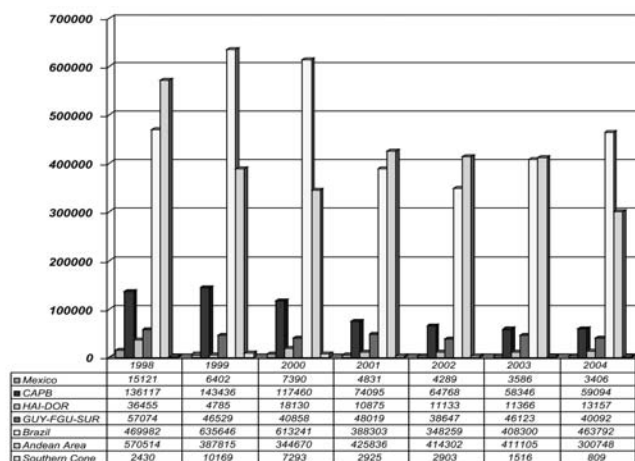


**Figure 4: Malaria Mortality in the Americas, 1998-2004**  
Number of Deaths



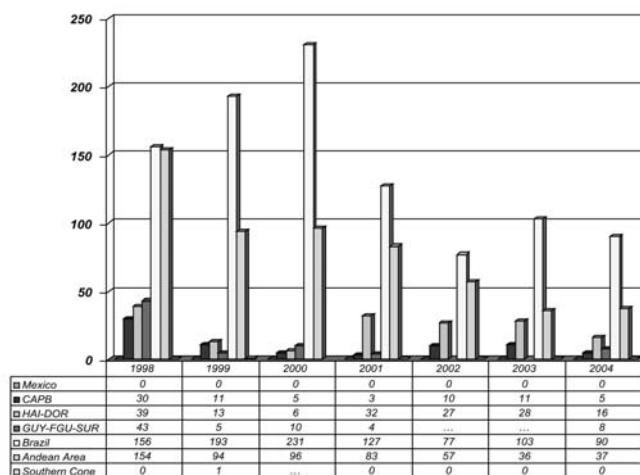
However, improvements have been rather disparate with some sub-regions and countries lagging if not totally getting worse. The countries which share the Amazon rainforest comprising the Andean Region (Bolivia, Colombia, Ecuador, Peru, and Venezuela); Brazil; and the Guyana Shield (French Guiana, Guyana, and Suriname) have borne the brunt of the problem, with 91% of all malaria cases and 87% of all malaria-attributed deaths reported in 2004 (Figures 5 and 6).

**Figure 5: Malaria Morbidity in the Americas by Subregion, 1998-2004: Number of Positive Blood Slides**



CAPB- Central America, Panama and Belize • Southern Cone – Argentina and Paraguay • HAI-DOR- Haiti and Dominican Republic • GUY-FGU-SUR - Guyana, French Guiana, and Suriname • Andean Area- Bolivia, Colombia, Ecuador, Peru, and Venezuela

**Figure 6: Malaria Mortality in the Americas by Subregion, 1998-2004: Number of Deaths**



CAPB- Central America, Panama and Belize • Southern Cone – Argentina and Paraguay • HAI-DOR- Haiti and Dominican Republic • GUY-FGU-SUR - Guyana, French Guiana, and Suriname • Andean Area- Bolivia, Colombia, Ecuador, Peru, and Venezuela



Of the 21 Member States where malaria is endemic, 15 reported decreases in the absolute number of cases. Eight have so far reached the RBM target of at least 50% case reduction; seven registered decreases in case numbers but are less than that of the 50% goal for 2010; while six countries continue to report increases (Table 1).

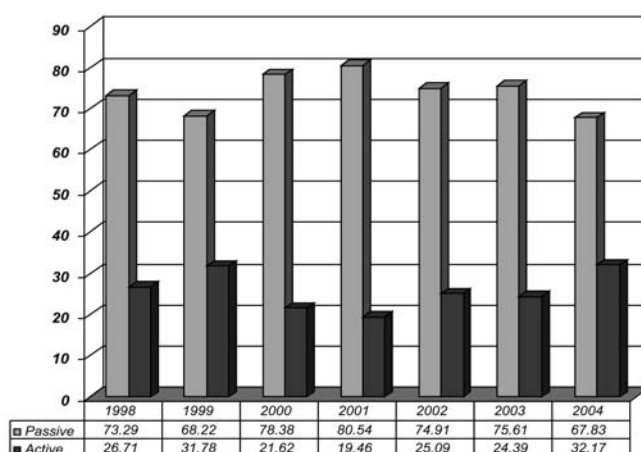
**Table 1: Percent change in number of cases reported, 2000 vs. 2004  
By Country**

COUNTRY	PERCENTAGE CHANGE
Argentina	- 74%
Belize	- 29%
Bolivia	- 53%
Brazil	- 24%
Colombia	+ 9%
Costa Rica	- 31%
Dominican Republic	+ 91%
Ecuador	- 73%
El Salvador	- 85%
French Guiana	-18%
Guatemala	- 46%
Guyana	+20%
Haiti	- 40%
Honduras	- 55%
Mexico	- 54%
Nicaragua	- 71%
Panama	+ 392%
Paraguay	- 90%
Peru	+26%
Suriname	-38%
Venezuela	+ 57%

No reintroduction of transmission has been reported among Member States declared malaria transmission-free in previous years. These countries in North America (the U.S. and Canada); South America (Uruguay and Chile); and the Caribbean (except Haiti and the Dominican Republic), succeeded in eliminating transmission of the disease since the Global Malaria Eradication Strategy was launched in the 1950's, before being abandoned in the late 1960's and subsequently replaced by the Global Malaria Control Strategy in 1992. Among the 27 territories free of malaria transmission, between 900 and 1,300 cases were reported annually from 1999 to 2004. These imported cases occur among travelers from endemic countries in the Americas and from other regions of the world.

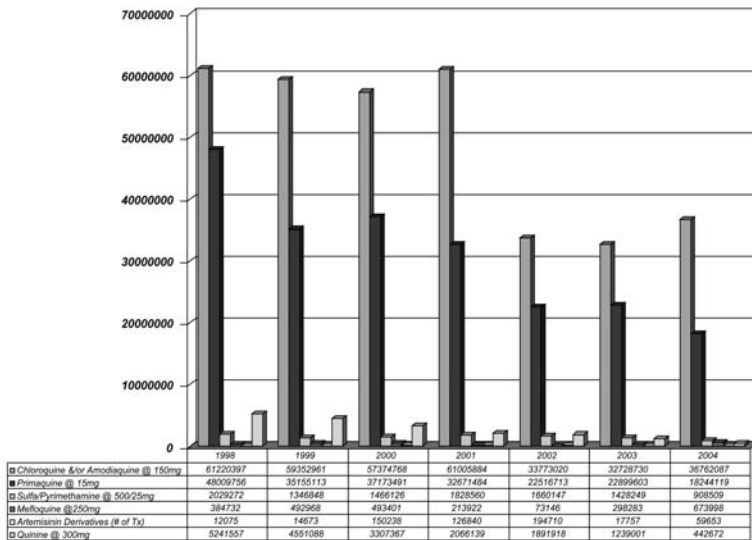
Passive case detection (diagnostic examination performed in general health services and hospitals and by volunteer collaborators only on patients with clinical symptoms) is used more widely in the Region (Figure 7) with the exception of Argentina, Costa Rica, the Dominican Republic, Panama, and Paraguay where active case detection (diagnostic examinations performed for screening, epidemiologic investigations, and follow-up purposes) is more extensively practiced. To date, official data on access and availability of case detection modalities is limited but microscopy is known to still be most widely used. Rapid Diagnostic Tests, on the other hand, are available in some areas but information on their extent and criteria for use is not certain.

**Figure 7: Americas: Passive vs. Active Case Detection, 1998-2004  
(% of Blood Slides Examined)**



Amino-quinolines remain as the most widely used anti-malarial medication in the region (Figure 8). *Plasmodium falciparum*, the most pathogenic of the malaria parasites, is now known worldwide to be capable of developing resistance to anti-malarials. The phenomenon, which was first reported in Colombia in 1958, continues to be one of the biggest challenges in the global battle against the disease. In the Americas, resistance has only been suspected and/or confirmed in the countries which share the Amazon rainforest.

The earliest adoption of artemisinin-based combination therapy against malaria was in Peru and Bolivia in 2001. With the increasing focus on drug-resistance research and the use of evidence-based treatment regimens, six countries (Bolivia, Ecuador, Guyana, Peru, Suriname, and Venezuela) are now using various artemisinin-based treatment combinations as first line therapy against *P. falciparum* malaria.

**Figure 8: Antimalarial Drugs Used in the Americas, 1998-2004**

At least 8 different species of Anopheles mosquitoes are considered significant vectors for malaria in the region (Table 2).

**Table 2: Mosquito Vectors of Malaria by Country, 2004**

COUNTRY	VECTOR(S)
Argentina	<i>A. pseudopunctipennis</i>
Belize	<i>A. albimanus</i> , <i>A. darlingi</i> , <i>A. vestitipennis</i>
Bolivia	<i>A. darlingi</i> , <i>A. pseudopunctipennis</i>
Brazil	<i>A. albicansis</i> , <i>A. darlingi</i>
Colombia	<i>A. albimanus</i> , <i>A. darlingi</i>
Costa Rica	<i>A. albimanus</i>
Dominican Republic	<i>A. albimanus</i>
Ecuador	<i>A. albimanus</i>
El Salvador	<i>A. albimanus</i>
French Guiana	<i>A. darlingi</i>
Guatemala	<i>A. albimanus</i> , <i>A. darlingi</i> , <i>A. pseudopunctipennis</i> , <i>A. vestitipennis</i>
Guyana	<i>A. darlingi</i>
Haiti	<i>A. albimanus</i>
Honduras	<i>A. albimanus</i> , <i>A. darlingi</i>
Mexico	<i>A. albimanus</i> , <i>A. pseudopunctipennis</i> , <i>A. vestitipennis</i>
Nicaragua	<i>A. albimanus</i>
Panama	<i>A. albimanus</i>
Paraguay	<i>A. darlingi</i>
Peru (2002)	<i>A. albimanus</i> , <i>A. benarrochi</i> , <i>A. darlingi</i> , <i>A. pseudopunctipennis</i>
Suriname	<i>A. darlingi</i>
Venezuela	<i>A. aquasalis</i> , <i>A. darlingi</i> , <i>A. marajoara</i>

As of 2004, most of the 21 endemic countries are known to include a vector control component for malaria in their national programs but reports/data on the evaluation of their effectiveness and efficiency are limited.

### **Socio-Political and Economic Dimensions**

Socio-political and economic factors are directly cited as important aspects of the problem of malaria by 11 of the 19 endemic countries which provided qualitative information on their respective national malaria situations from 2000 to 2004. Among those specifically reported as causes of the persistence of malaria transmission in countries are: poor housing conditions particularly among itinerant groups and isolated populations; various socio-political problems that impede access to programs; lack of political commitment to implement the Global Malaria Control Strategy in the local health services; illegal activities in some areas that prevent identification of cases; increase in demand and reduction in resources in marginalized settlements; and lack of basic sanitation in marginalized human settlements. More importantly, country reports emphasized the economic and political reasons behind the high level of migration among populations where prevention and control is most difficult – miners, loggers, banana and sugarcane plantation workers, indigenous groups, and populations in areas of armed-conflict (Annex A).

### **Behavioral and Environmental Dimensions**

A strong behavioral component is highlighted by 15 countries which attributes the persistence of malaria transmission to heavy migratory movements of various populations. Migratory behavior makes almost every aspect of malaria prevention and control extremely difficult to implement and monitor. Other behaviors reported as a continuing cause of malaria transmission include: habit of the population to remain outside housing/protective shelter during the known period of increased hematophagous activity of vectors; limited community participation; limited social commitment and social mobilization; high rate of non-compliance to treatment regimens; incorrect self-medication; and use of expired/low-quality medications.

The natural environment of the most affected countries is also identified as an aggravating factor for malaria: presence of natural breeding sites; favorable ecological conditions for reproduction of vectors; existence of virtually inaccessible/isolated communities; and presence of multiple vectors (Annex A).

## **Educational Dimensions**

Six countries consistently mentioned the educational aspect of their national malaria situation (Appendix A). Education on malaria prevention and control is deemed lacking among the most affected groups as technical training on malaria is deficient among many health personnel. While only six nations directly mentioned education as a problem area, many other countries are assessed as having an inadequate number of malaria-trained health professionals.

## **Administrative and Policy Dimensions**

Problems on program policy and administration are special dimensions of the malaria problem that possess the greatest potential for the most concrete forms of intervention. At least 11 nations cited different administrative and policy matters that contribute to the persistence of malaria transmission in the region. These problems include: lack of budgetary allocations; limited health service coverage in malaria endemic areas; lack of inter-sectoral cooperation; lack of stratification in control strategies; problems on sustainability of measures; drug-supply problems; lack of transportation provisions; lack of insecticide inputs; delay in release of funds; delay in approval/execution of projects; administrative and management problems related to the decentralization process in municipalities; disruption of country programs due to outbreaks of other infectious diseases such as dengue; inadequate vector control; and lack of human and financial resources (Annex A).

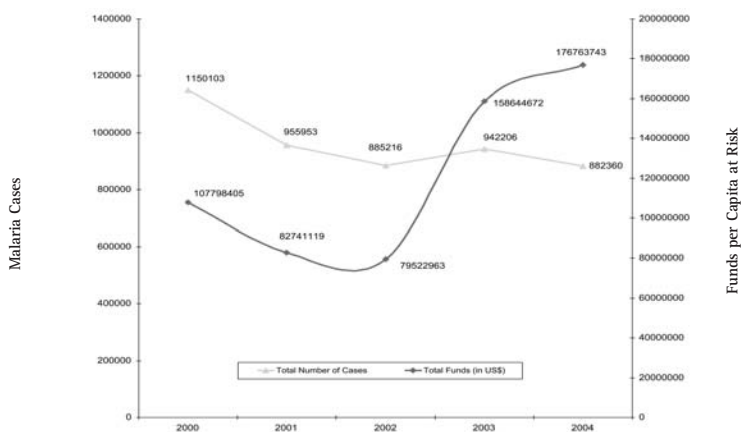
It is important to note that the above-mentioned challenges manifested themselves within the context of the strategies employed by the region since its official adoption of the RBM Initiative in 2000. Efforts under the strategy, which had its own share of achievements, focused on support of health ministries' functions related to malaria prevention and control; promotion of synergies with related health programs, especially those for environmental health, pharmaceuticals and maternal and child health, HIV/AIDS and tuberculosis; promotion of the participation of communities and civil society; engagement of the private sector in delivery of prevention and treatment; identification of best practices, partnership and finance mechanisms for extending interventions; preparation of tools and support measures for management; capacity building; and the promotion of collaboration among countries.

Member States utilize national resources alongside the financial support extended under the Roll Back Malaria Initiative; contribution from other sources; loans; and the technical and programmatic support from the Pan

American Health Organization. The Regional Malaria Strategy has resulted in a number of successful collaborations and attempts for more efficient mobilization of resources. These include (a) the Amazon Network for the Surveillance of Antimalarial Drug Resistance (RAVREDA)/ Amazon Malaria Initiative (AMI), a network of 8 nations in the Amazon region with financial support of the United States Agency for International Development (USAID); (b) the approval of proposals and the successful use of funds allocated for Bolivia, Guatemala, Guyana, Haiti, Honduras, Nicaragua, Suriname and the joint Andean proposal (Colombia, Ecuador, Peru, and Venezuela) in the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); (c) the Global Environment Facility/U.N. Environmental Program-funded efforts for the prevention of the reintroduction of DDT use and the demonstration of sustainable alternatives in malaria vector control in Mexico and Central America; and (d) the research collaboration with the World Bank, United Nations Development Program, and the WHO Program for Research and Training in Tropical Diseases.

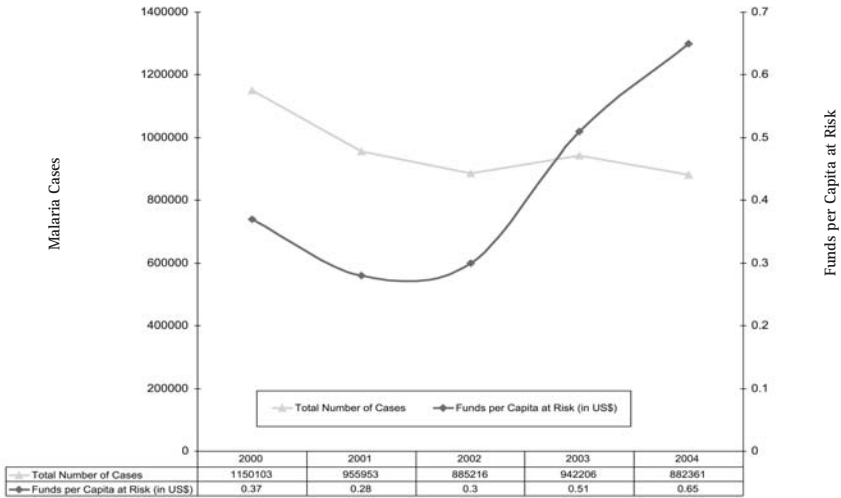
The total expenditure (national and external contributions) for malaria reported by the endemic countries increased from \$107,798,405 in 2000 to \$176,763,743 in 2004 while the number of reported cases went down from 1,150,103 to 882,360 during the same period (Figure 9). These figures suggest that the 267,743 decrease in the number of cases cost the endemic countries an additional \$68,965,338 or approximately \$258 per person. The expenditure per capita of the reported population at risk of malaria in the Americas grew by 76%; from \$0.37 per capita at risk in 2000 to \$0.65 per capita at risk in 2004 (Figure 10).

**Figure 9: Malaria Cases and Expenditure in the Americas, 2000-2004**

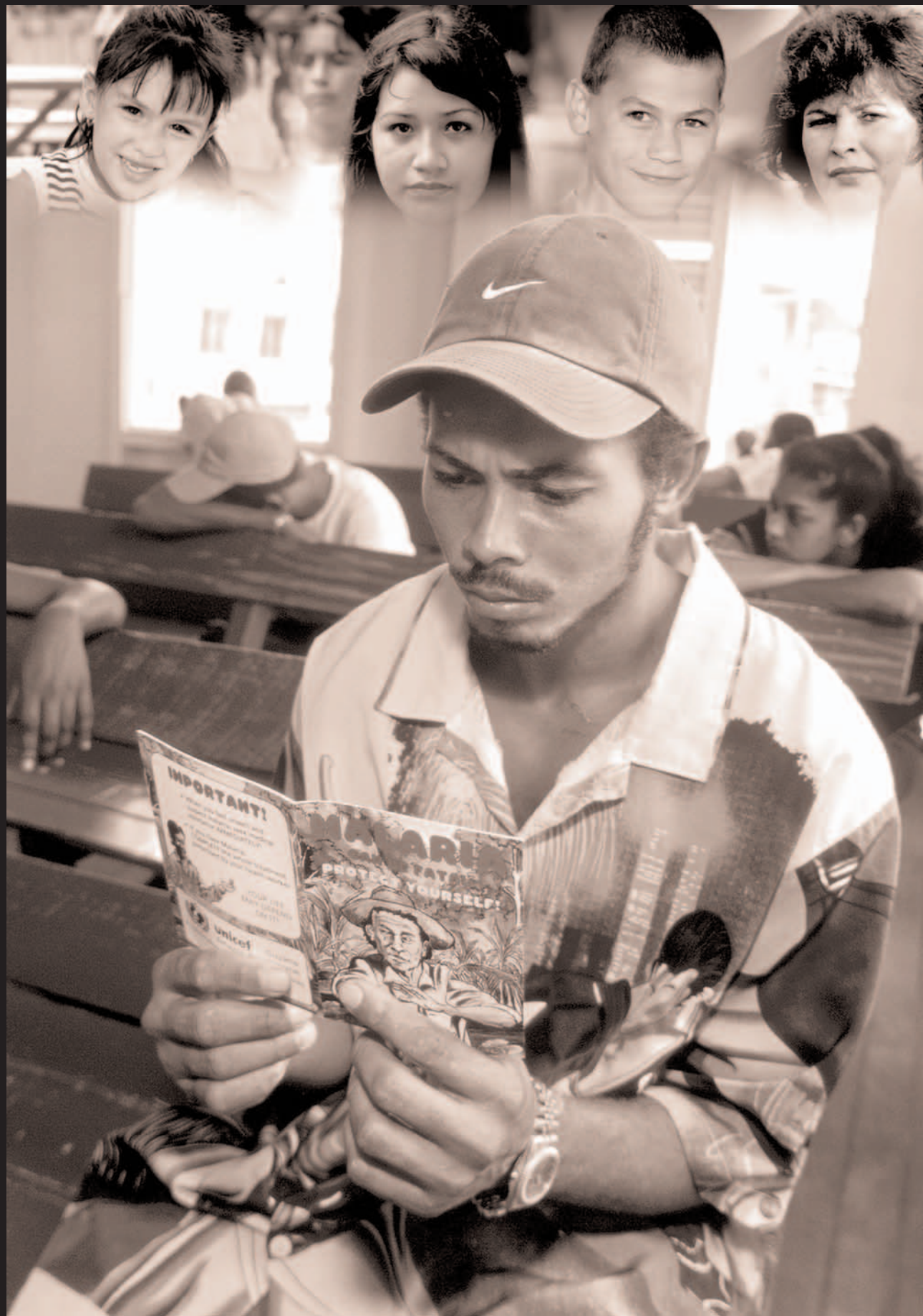


Source: Annual Reports on Malaria Status from Endemic Countries to PAHO

**Figure 10: Malaria Cases and Expenditure per capita at Risk in the Americas, 2000-2004**



Source: Annual Reports on Malaria Status from Endemic Countries to PAHO





# The Malaria Plan: Components and Priorities

Together, the realities of the malaria challenge in the region and PAHO's commitment to the global efforts and of the nations of the Americas serve as basis for the consolidation of the framework for, the components of, and the priorities in the Malaria Plan.

PAHO's goal for malaria in the region is to meet the RBM target of reducing by half the burden of the disease among participating countries by 2010. The achievement of this goal inherently fulfills the UN Millennium Development Goal of halting and beginning the reversal of the incidence of malaria (and other major diseases) by 2015, proposed to be an additional 25% by PAHO's Directing Council in September 2005.

To achieve this goal, PAHO's Malaria Program will focus on:

- **Objective 1:** Intensifying efforts on malaria prevention, surveillance, and early detection and containment of epidemics;
- **Objective 2:** Promoting, strengthening, and optimizing mechanisms and tools for judicious and cost-effective vector-management;
- **Objective 3:** Improving the system of malaria diagnosis and treatment;
- **Objective 4:** Fostering an environment that promotes and is supportive of efforts against the disease; and
- **Objective 5:** Optimizing efforts to strengthen the health systems and build the capacities of the nations to relevantly and adequately address their respective malaria challenges.

**"... and we take the challenge with all our might."**

Each objective constitutes a component of the plan under which issues and challenges are identified; objectives are clarified; institutional resources are analyzed; strategies are designed and implemented; and evaluation parameters are developed and used.

## 1. Malaria Prevention, Surveillance, and Early Detection and Containment of Epidemics

### a. Issues and Challenges

- Malaria transmission was eliminated from a number of territories but is still reported in 21 of the 39 Member States of PAHO. As of 2004, it is estimated that 41 million persons live in areas of moderate and high risk and approximately 1 million cases have been reported annually since 1987.
- Reduction of transmission over the past decades make some endemic countries potential candidates to pursue efforts aimed at eliminating transmission.
- Prevention is possible and cure is available for malaria; nations of the region have expressed, in various international conventions as well as in the resolutions of PAHO's Directing Council, their support and commitment to roll back malaria in the Americas.
- The spread of malaria does not recognize borders. Increased travel and migration within and outside the region makes prevention and control difficult. It is, thus, important to improve the exchange of epidemiological information at the regional level, among countries with common borders, and even within countries themselves.
- Poorer and itinerant population groups tend to have deficient or no access to adequate prevention and control interventions.
- The use of some readily available prevention, surveillance, and control resources (e.g. insecticide-treated nets; the Dengue Program's Communication for Behavioral Interventions or COMBI approach; Antenatal Control and Expanded Program of Immunization; and other potential inter-programmatic collaborations) needs to be optimized.
- Malaria prevention in the region can only be optimized through collective and coordinated efforts of all countries and various sectors in the Americas.
- Preparedness in managing special malaria situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible) varies among countries and their corresponding networks.

- The region needs to remain vigilant, relevant, and pro-active in its approach to malaria.

**b. Component Objectives**

- Prevent re-emergence of transmission where transmission has been interrupted and in the transmission-free areas;
- Reduce by 50% the mortality and morbidity due to malaria in the 21 endemic countries by 2010, and by a further 25% by 2015;
- Pursue possibilities of eliminating local malaria transmission in endemic countries where malaria elimination is considered feasible;
- Strengthen and improve the system and exchange of epidemiological information at the regional level, among countries with common borders, and within countries themselves;
- Reduce the disparity and inequality of results in malaria prevention with special focus on target population groups (e.g. pregnant women, children, persons living with HIV/AIDS, travelers, miners, loggers, banana and sugarcane plantation workers, indigenous groups, populations in areas of armed and/or social conflict, and people along areas of common epidemiologic interest/border areas);
- Ascertain the promotion, support, and strengthening of regional, sub-regional, inter-country, inter-institutional, inter-agency, inter-sectoral and other forms of networks in malaria prevention, surveillance, and the early detection and control of epidemics;
- Enhance institutional, network, and country readiness to manage special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible);
- Further strengthen capabilities in research and development of technologies and tools relevant to malaria prevention, surveillance, and early detection and containment of epidemics.

**c. Institutional Strengths and Experiences/Scaling-up Opportunities**

- PAHO has a long history of combating malaria and other communicable diseases and has gained formidable strength in its institutional and technical resources in disease prevention.
- PAHO's previous efforts and success on Malaria is credited to have led to the adoption of the Malaria Global Eradication Campaign launched in 1955.
- PAHO has continuously had a Regional Malaria Advisor who is also one of WHO's six Regional Malaria Advisors.
- PAHO's malaria program has sub-regional focal points that focus on inter-country efforts within the sub-regions.

- PAHO has communicable disease focal points in most countries of the region and in all of its malaria-endemic nations.
- Member States provide orientation to and have historically been confident and trustful of PAHO's programs.
- Countries of the region are committed to the goal of rolling back malaria, as expressed in various international resolutions.
- There exist multiple projects in malaria and other related programs which have potentials for synergistic collaboration and progress.
- PAHO remains very potent in resource mobilization in the region.

#### d. Strategies

- Strengthen surveillance systems and rapid response capacity in countries where transmission has been interrupted;
- Strengthen and expand the Global Malaria Control Strategy and Roll Back Malaria Initiative in all endemic countries;
- Advocate and support elimination efforts in endemic countries considered as possible candidates for malaria elimination;
- Adopt appropriate policies and strategies on malaria prevention, surveillance, and the early detection and containment of epidemics, including those that are essential to target population groups and special situations;
- Integrate vertical malaria surveillance to the general health surveillance system and set-up mechanisms for a more efficient exchange of epidemiological information among and within nations of the region;
- Promote the integration of malaria programs within the health system, synergize with other programs (e.g. other vector-borne disease programs, Antenatal Control and Expanded Program of Immunization), and advocate the optimum use of available resources (e.g. insecticide-treated nets);
- Maintain and strengthen existing multi-country, multi-institutional, and multi-sectoral malaria networks;
- Advocate the inclusion of provisions for special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible) in national malaria program plans;
- Develop and implement a relevant research agenda on malaria prevention, surveillance, and early detection and containment of epidemics.

## 2. Integrated Vector Management

### a. Issues and Challenges

- *P. vivax* is the most prevalent of the malarial parasites in the region. As a result of its specific characteristic life cycle, treatment of *P. vivax* cases

is prolonged (which makes adherence to treatment more difficult) and preventive strategies must include appropriate sustainable vector control measures.

- Vector control options and alternatives (complete vs. selective) need to be clarified and addressed; and the vector control problems and realities in the different countries are diverse.
- The decentralization in many health systems of the region has resulted to inefficiencies in vector management and the displacement and eventual loss of well-trained vector control technicians and practicing entomologists in the field.
- The system of vector management in a significant number of malaria endemic countries in the region is deemed inefficient and ineffective.
- Changing vector patterns and susceptibilities make prevention and control difficult.

#### **b. Component Objectives**

- Advocate and strengthen vector management as an integral component of the prevention and control of malaria and other vector-borne diseases;
- Advocate the use of more environment-friendly vector management options (e.g. use of larvivorous fish, bacteria, and other non-hazardous biological agents; and environment sanitation such as drainage maintenance and filling up of excavations);
- Provide technical assistance to countries in building their capacities to address their specific problems on vector management;
- Advocate adequate recruitment, training, and retention of vector management-trained personnel in the health system;
- Advocate the implementation of Integrated Vector Management (IVM) in the various levels of work (global, regional, sub-regional, national, community);
- Advocate research on integrated vector management and related areas of work.

#### **c. Institutional Strengths and Experiences/Scaling-up Opportunities**

- PAHO possess strong capabilities (including human resources; information and knowledge management; resource mobilization; training; data and policy analysis; monitoring and evaluation; health information systems; inter-programmatic approaches and partnerships) to assist its member nations in consolidating their respective systems for integrated vector management.

#### **d. Strategies**

- Extend technical assistance in the consolidation and implementation of national policies and strategic plans on integrated vector management;

- Promote and provide technical assistance in the recruitment and training of integrated vector management-trained personnel;
- Collaborate with other Vector-borne Disease Programs on vector management- related research.

### 3. Malaria Diagnosis and Treatment

#### a. Issues and Challenges

- Laboratory network is limited in coverage and community workers and volunteers in areas with difficult access to health services have limited or no access to rapid diagnostic tests.
- Sub-regional reference laboratories for malaria diagnosis and treatment must be identified and strengthened.
- There is a need to strengthen the capabilities of national laboratories, including the training of laboratory professionals and technicians.
- Counterfeit drugs are now in the market. Quality control of drugs through external quality control reference laboratories needs to be strengthened and assured.
- Poorer and itinerant populations and other target groups (e.g. pregnant women, children, persons living with HIV/AIDS, travelers, miners, loggers, banana and sugarcane plantation workers, indigenous groups, populations in areas of armed and/or social conflict, and people along areas of common epidemiologic interest/border areas) tend to have deficient access to timely and adequate malaria diagnosis and treatment.
- Drug resistance has been confirmed in the Amazon region but not in Mexico, Central America and Hispaniola.
- The cost of combination therapy for drug-resistant *P. falciparum* is high and considered unaffordable by affected poor populations.
- Problems exist regarding availability and adherence to treatment regimens including the standard fourteen-day treatment for *P. vivax*; and on skills in the management of anti-malarials.
- Capacities to perform and sustain appropriate and adequate malaria diagnosis and treatment in special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible) vary among countries.
- Challenges on malaria diagnosis and treatment in the region are continuously evolving.

#### b. Component Objectives

- Further develop, strengthen and expand the coverage of existing

regional networks in the malaria diagnosis and in the surveillance of anti-malarial drug resistance;

- Increase the accessibility, equity in coverage, efficiency, effectiveness of, and adherence to malaria diagnosis and treatment regimens specially among pregnant women, children, persons living with HIV/AIDS, travelers, miners, loggers, banana and sugarcane plantation workers, indigenous groups, populations in areas of armed and/or social conflict, & people along areas of common epidemiologic interest/border areas;
  - Identify sub-regional reference laboratories and strengthen the capabilities of national laboratories, including the training of laboratory personnel;
  - Enhance institutional, network, and country readiness to perform and manage appropriate and adequate malaria diagnosis and treatment in various circumstances and special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible);
  - Further strengthen capabilities in research and development of technologies and tools relevant to malaria diagnosis and treatment.
- c. Institutional Strengths and Experiences/Scaling-up Opportunities**
- In addition to institutional strengths identified in the other components, PAHO's Malaria Program has established its role and capacity in supporting the development of proposals and networks; and collaboration on diagnosis and treatment in the region as demonstrated by the following examples in recent years:
    - Amazon Network for the Surveillance of Antimalarial Drug Resistance/Amazon Malaria Initiative (RAVREDA/AMI)
    - Country proposals financed by the Global Fund (Bolivia, Guatemala, Guyana, Haiti, Honduras, Nicaragua and Suriname)
    - Joint Andean Country Proposal to the Global Fund (Andean Health Organization)
    - Joint efforts in Mexico and Central America funded by the Global Environment Facility/UN Environmental Program, involving 3 PAHO areas of work (HA, HDM, and SDE)
    - Research collaborations with the WB/UNDP/WHO program for Research and Training in Tropical Diseases
    - Research capabilities are strong to aid in achieving the specific component goals on malaria diagnosis and treatment
- d. Strategies**
- Lobby for increased support of existing networks, enhance the availability of their outputs, and encourage countries to optimize their usage

- Strengthen quality control capacities of regional, sub-regional, and country laboratories;
- Advocate, promote, and support adoption of appropriate policies concerning malaria diagnosis and treatment in all levels of governance, considering among others, the situation of specific target populations, and special situations;
- Promote the use/allocation of PAHO's Strategic Fund for collective purchase of anti-malarial drugs and other supplies to lower cost of treatment and ensure drug quality;
- Efficiently use existing measures/mechanisms (e.g. use of the Communication for Behavioral Intervention [COMBI] approach to increase treatment adherence) to optimize desired outputs;
- Consolidate the research agenda on malaria diagnosis and treatment;
- Provide direct technical support/guidance on drug-resistance research, effectiveness studies on diagnostic tests, and treatment protocol/regimen adherence.

#### 4. Enabling Environment for Malaria Prevention and Control

##### a. Issues and Challenges

- A number of strong networks are established but coverage has not been optimized to include certain countries and sectors (e.g. Non-Governmental Organizations, the academe, etc.).
- There exist a number of strong and fully-functioning initiatives within WHO/PAHO (e.g. Healthy Schools, Healthy Municipalities, COMBI, etc.) but whose potentials for inter-programmatic work and synergy has not been optimized.
- Non-Governmental Organization (NGO), academic institution and community involvement in different levels of program development, planning, and management is limited/not maximized.
- Active community participation is essential in achieving desired results in all levels of work (grass-roots, national, regional, and global).
- The dynamics of the factors affecting the attainment of regional and national goals for malaria prevention and control needs more in-depth investigation and understanding.
- There is need for continuous regular coordination and knowledge-sharing among all malaria professionals and workers in the region.

##### b. Component Objectives

- Extend the development and coverage of networks to include all 21 malaria endemic countries in the region and insufficiently represented sectors and target populations (e.g. pregnant women, children, per-



sons living with HIV/AIDS, travelers, miners, loggers, banana and sugarcane plantation workers, indigenous groups, populations in areas of armed and/or social conflict, and people along areas of common epidemiologic interest/border areas);

- Optimize opportunities for synergy with other existing WHO/PAHO initiatives;
- Increase the participation and involvement of the NGO's and the community in various levels of work in malaria and in managing special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible);
- Further strengthen capabilities in research and development of technologies and tools relevant to the promotion of an enabling environment for malaria prevention and control;
- Promote and enhance opportunities for continuous regular coordination and knowledge-sharing in all levels of work (regional, sub-regional, and national).

#### c. Institutional Strengths and Experiences/Scaling-up Opportunities

- PAHO's Malaria Program has demonstrated in its previous and current efforts, its value and capabilities in promoting and supporting the formation, development, and expansion of different types of collaboration and networks.
- PAHO's networking capabilities are not limited to inter-country efforts but also include inter-institutional (CDC, USAID, USP, MSH, etc.), inter-programatic and inter-sectoral endeavors.
- A number of guides and manuals on community involvement, specifically on malaria, are available.

#### d. Strategies

- Strengthen and promote the expansion of the coverage of present partnerships and collaborations (e.g. RAVREDA and DDT-GEF) to include all 21 endemic countries and under-represented sectors and target populations;
- Advocate and encourage the involvement of the NGO's and the participation of the affected communities in malaria work;
- Advocate and support research endeavors and the adoption of appropriate policies that promote an enabling environment for malaria prevention and control;
- Spearhead the conduct of the biennial national malaria program leaders' conference and support similar activities in the sub-regional and national levels.

## 5. Health Systems Strengthening/Country-Level Capacity-Building

### a. Issues and Challenges

- Health system reforms in the different countries in recent years resulted to the loss of trained malaria personnel.
- Decentralization of managerial responsibility in some instances unaccompanied by managerial capability.
- Inadequate replacement of malaria-trained staff is largely due to fewer people being trained and/or limitations in malaria and other communicable disease training programs.
- Strategic orientations and policies on malaria must be clarified on the national level and capacities of countries to manage special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible) must be improved.
- Program monitoring and evaluation is lacking/weak in many areas
- Relevant health facilities tend to be unavailable/inaccessible to poorer populations and groups susceptible to malaria infection.
- Management, logistics, and financial capabilities, specifically in the area of resource-generation and mobilization, and procurement and supply is generally inadequate.
- A number of countries have received grants from the Global Fund and are in need of technical assistance for the successful implementation of their respective projects.
- Operational research is not sufficiently emphasized and performed in various levels of malaria program(s).

### b. Component Objectives

- Ensure adequate recruitment, training, and retention of malaria-trained personnel in the health system;
- Enhance country capacities to manage special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible);
- Establish relevant guidelines and increase efforts on monitoring and evaluation of programs;
- Increase the availability and accessibility of health infrastructure to the most affected populations (e.g. pregnant women, children, persons living with HIV/AIDS, travelers, miners, loggers, banana and sugarcane plantation workers, indigenous groups, populations in areas of armed and/or social conflict, and people along areas of common epidemiologic interest/border areas.);

- Develop the management, logistics, financial and resource-generation capabilities of the country programs;
  - Assist in optimizing the results in the implementation of Global Fund Projects in the region;
  - Promote and emphasize the benefits of operational research in program development and management;
  - Further strengthen capabilities in research and development of technologies and tools relevant to health systems strengthening and country-level capacity building.
- c. Institutional Strengths and Experiences/Scaling-up Opportunities**
- PAHO possess strong capabilities (including human resources, information and knowledge management, resource mobilization, training, data and policy analysis, monitoring and evaluation, health information systems, inter-programmatic approaches and partnerships) to assist its member nations in health systems strengthening and capacity building.
  - PAHO has been mandated by Member States to extend technical assistance in the implementation of Global Fund Projects in the region.
- d. Strategies**
- Promote and provide technical assistance in the recruitment and training of malaria-trained personnel;
  - Extend technical assistance in the consolidation of national policies and strategic plans on malaria and related concerns;
  - Extend technical assistance in monitoring and evaluation of malaria-related efforts;
  - Integrate malaria programs within the health system and assist in developing the capabilities of the system in addressing malaria-related challenges including provisions for special populations and specific situations;
  - Provide technical assistance and training on malaria program management, operational research, and related competencies;
  - Provide technical assistance to countries in the implementation of their respective Global Fund Projects;
  - Optimize knowledge-sharing capabilities and mechanisms among countries of the region.



Photo by Dr. Viterman Ali, Medical Researcher, National Malaria Program, Bolivia

# Institutional Implications on the Regional Malaria Program

Scaling-up the regional efforts against malaria inherently implies the need to put into practice and optimally use the lessons learnt from previous experiences. Continuous relevance of the program to the realities and needs of the region, as well as the uncompromised technical excellence of PAHO's core of health professionals, are two of the strongest enduring qualities of the Regional Malaria Program. In order for PAHO to meet its 2010 targets for malaria, the program must capitalize on its basic strengths and address a number of significant issues within the organization and its sphere of influence. These issues are identified and explained as follows:

## **1. Advocating program alignment and harmonization in all levels of work (global, regional, sub-regional, country, and grass-roots)**

Variations in realities and challenges exist in the different levels of work resulting to specificities in the WHO, RBM, PAHO/AMRO, and country strategic policies. However, alignment is deemed important to extensively increase efficiency and effectiveness of efforts.

While the new PAHO/AMRO Malaria Plan was based on currently available regional feedback mechanism, the alignment of the revised program strategies with the challenges identified in the proposed WHO's General Program of Work for 2006 to 2015 is remarkable.

To demonstrate more clearly, the revised strategies in the Regional Malaria program are presented in the succeeding matrix alongside the "4 challenges to health" identified in the proposed WHO's General Program of Work for 2006 to 2015 (Table 3).

**"We recognize the need for reforms . . ."**

**Table 3: WHO's Challenges to Health vis a vis PAHO's Malaria Plan  
Programmatic Adjustments**

WHO's Challenges to Health	PAHO's Revised Malaria Program Strategies
Gaps in Synergy	<ul style="list-style-type: none"> <li>• Strengthen and expand the Global Malaria Control Strategy and Roll Back Malaria Initiative in all endemic countries</li> <li>• Integrate vertical malaria surveillance to general health surveillance system and set-up mechanisms for a more efficient exchange of epidemiological information among and within nations of the region</li> <li>• Promote the integration of malaria programs within the health system and synergize with other programs (e.g. other vector-borne disease programs, and Antenatal Expanded Program of Immunization)</li> <li>• Advocate the inclusion of provisions for special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible) in national malaria program plans</li> <li>• Extend technical assistance in the consolidation and implementation of national policies and strategic plans on integrated vector management</li> <li>• Promote and provide technical assistance in the recruitment and training of integrated vector management-trained personnel</li> <li>• Collaborate with other Vector-borne Disease Programs on vector management- related research</li> <li>• Efficiently use existing measures/mechanisms (e.g. use of the Dengue Program COMBI Model to increase treatment adherence) to optimize desired outputs</li> <li>• Integrate malaria programs within the health system and assist in developing the capabilities of the system in addressing malaria-related challenges including provisions for special populations and specific situations</li> </ul>
Gaps in Implementation	<ul style="list-style-type: none"> <li>• Strengthen surveillance systems and rapid response capacity in countries where transmission has been interrupted</li> <li>• Advocate and support elimination efforts in</li> </ul>

WHO's Challenges to Health	PAHO's Revised Malaria Program Strategies
	<p>endemic countries considered as possible candidates for malaria elimination</p> <ul style="list-style-type: none"> <li>• Adopt appropriate policies and strategies on malaria prevention, surveillance, and the early detection and containment of epidemics, including those that are essential to target population groups and special situations</li> <li>• Lobby for increased support of existing networks, enhance the availability of their outputs, and encourage countries to optimize their usage</li> <li>• Strengthen quality control capacities of regional, sub-regional, and country laboratories</li> <li>• Advocate, promote, and support adoption of appropriate policies concerning malaria diagnosis and treatment in all levels of governance, considering among others, the situation of specific target populations, and special situations</li> <li>• Promote the use/allocation of PAHO's Strategic Fund for collective purchase of anti-malarial drugs and other supplies to lower cost of treatment and ensure drug quality</li> <li>• Efficiently use existing measures/mechanisms (e.g. use of the Dengue Program COMBI Model to increase treatment adherence) to optimize desired outputs</li> <li>• Provide direct technical support/guidance on drug-resistance research, effectiveness studies on diagnostic tests, and treatment protocol/regimen adherence</li> <li>• Strengthen and promote the expansion of the coverage of present partnerships and collaborations (e.g. RAVREDA and DDT-GEF) to include all 21 endemic countries and under-represented sectors and target populations</li> <li>• Advocate and encourage the involvement of the NGO's and the participation of the affected communities in malaria work</li> <li>• Advocate and support research endeavors and the adoption of appropriate policies that promote an enabling environment for malaria prevention and control.</li> <li>• Spearhead the conduct of the biennial national malaria program leaders' conference and support similar activities in the sub-regional and national levels</li> </ul>

WHO's Challenges to Health	PAHO's Revised Malaria Program Strategies
Gaps in Social Justice	<ul style="list-style-type: none"> <li>• Promote and provide technical assistance in the recruitment and training of malaria-trained personnel</li> <li>• Extend technical assistance in the consolidation of national policies and strategic plans on malaria and related concerns</li> <li>• Extend technical assistance in monitoring and evaluation of malaria-related efforts</li> <li>• Integrate malaria programs within the health system and assist in developing the capabilities of the system in addressing malaria-related challenges including provisions for special populations and specific situations</li> <li>• Provide technical assistance and training on malaria program management, operational research, and related competencies</li> <li>• Provide technical assistance to countries in the implementation of their respective Global Fund Projects</li> <li>• Optimize knowledge-sharing capabilities and mechanisms among countries of the region</li> </ul> <ul style="list-style-type: none"> <li>• Adopt appropriate policies and strategies on malaria prevention, surveillance, and the early detection and containment of epidemics, including those that are essential to target population groups and special situations</li> <li>• Advocate, promote, and support adoption of appropriate policies concerning malaria diagnosis and treatment in all levels of governance, considering among others, the situation of special target populations, and special situations</li> <li>• Strengthen and promote the expansion of the coverage of present partnerships and collaborations (e.g. RAVREDA and DDT-GEF) to include all 21 endemic countries and under-represented sectors and target populations</li> <li>• Integrate malaria programs within the health system and assist in developing the capabilities of the system in addressing malaria-related challenges including provisions for special populations and specific situations</li> </ul>
Gaps in Knowledge	<ul style="list-style-type: none"> <li>• Develop and implement a relevant research agenda</li> </ul>



WHO's Challenges to Health	PAHO's Revised Malaria Program Strategies
	<p>on malaria prevention, surveillance, and early detection and containment of epidemics</p> <ul style="list-style-type: none"> <li>• Collaborate with other Vector-borne Disease Programs on vector management- related research</li> <li>• Promote and provide technical assistance in the recruitment and training of integrated vector management-trained personnel</li> <li>• Consolidate the research agenda on malaria diagnosis and treatment</li> <li>• Provide direct technical support/guidance on drug-resistance research, effectiveness studies on diagnostic tests, and treatment protocol/regimen adherence</li> <li>• Advocate and support research endeavors and the adoption of appropriate policies that promote an enabling environment for malaria prevention and control.</li> <li>• Provide technical assistance and training on malaria program management, operational research, and related competencies</li> <li>• Provide technical assistance to countries in the implementation of their respective Global Fund Projects</li> <li>• Optimize knowledge-sharing capabilities and mechanisms among countries of the region</li> </ul>

## 2. Maintaining clarity and a common understanding of program objectives and concepts

Monitoring and evaluation of the program remains formidable in all levels of work. A significant part of the challenge, among many others, is the development of indicators sensitive and reasonably accessible to assess the status of the program. While the different indicators are expected to vary in importance depending on the realities and needs in the various levels of work, the choice of indicators must be made in consideration of a common and clear understanding of the over-all program objectives and concepts.

## 3. Maintaining programmatic focus/constancy and consistency of efforts;

Like in most health problems, the factors affecting the status of malaria in the region are multi-faceted. The intricate nature of the situation predisposes the

program to lose appropriate focus towards relevant goals. By identifying, clarifying and pursuing its priority areas of work and technical cooperation, the Regional Malaria Program will maximize the use of its resources and realize its goals more efficiently.

#### **4. Optimizing efforts and results**

Directly related to the issue of maintaining focus is the need to balance it with optimizing efforts and results. The malaria plan advocates and pursues PAHO's thrust of working in synergy and inter-programmatically so that greater and better results may be achieved with the use of fewer resources.

#### **5. Fostering accountability within the organization and its sphere of influence**

The current organizational set-up of the malaria program creates the opportunity for synergistic and inter-programmatic work. However, an evolving challenge is to improve the mechanisms of accountability among everyone involved in the program. In addition to institutional measures that assure accountability in public resource utilization, the Malaria Plan enables the Regional Malaria Program to concur with PAHO's over-all goal of being a high-performance organization by clarifying the dynamics of responsibilities of various individuals and offices in the Regional Malaria Program (Annex B).

#### **6. Maintaining a pro-active approach and better foresight**

Protecting the current gains in the program and managing the present situation involves making sure that new and greater problems are prevented or addressed even before they take place. A pro-active approach and better foresight is promoted in the Malaria Plan through the strengthening of surveillance systems, commitment to continuous relevant research, the development of an enabling environment for malaria prevention and control, and building the capacity of countries and communities to sustain their local programs.

#### **7. Identifying, enabling, and sustaining champions**

Decades of experience in the malaria program points to the importance of constantly having adequate and appropriate human resource at the right place and time. The Malaria Plan places strong emphasis towards meeting the manpower resource needs of country programs, particularly those with adequate skills in management including those of integrated vector management.

## **8. Bridging gaps between policy and practice**

In the same light that WHO has identified the current global health challenges into four types of gaps, the Regional Strategy for Malaria in the Americas responds to the challenge of bridging gaps between policy and actual program implementation. Constant review of existing policies will be performed to identify problem areas which will be addressed accordingly. The Malaria Plan adds value to and increases the effectiveness and efficiency of the regional program by focusing on strengthening the existing regional strategies on prevention, control, diagnosis and treatment; integrating provisions for vulnerable population groups (pregnant women, children, persons living with HIV/AIDS, travelers, miners, loggers, banana and sugarcane plantation workers, indigenous groups, populations in areas of armed and/or social conflict, and people along areas of common interest/border areas); integrating plans for special situations (epidemics, complex emergencies, urban malaria, malaria in remote and border areas, low-incidence and other areas of possible malaria elimination); performance of effective and efficient regional and sub-regional monitoring and evaluation; capacity-building among member states; social mobilization, communication, and advocacy; research and development; and optimizing opportunities and mechanisms for knowledge-sharing and inter-programmatic coordination.



# Implementation, Monitoring, and Evaluation: PAHO's Logical Framework for Fulfilling Its Global, Regional, and National Commitments on Malaria

The implementation of the Regional Strategic Plan for Malaria will be evaluated yearly and in concurrence with the institutionalized monitoring mechanisms within the WHO Roll Back Malaria Initiative and the Pan American Health Organization (Mid-term Reviews and Biennial Evaluations). A comprehensive report will be consolidated towards the end of 2010 to fully assess the implementation of the plan and extensively analyze the lessons learned during the entire process. The indicators reflected on the following logical framework will be used in reviewing and evaluating the progress of the strategic plan.

## OBJECTIVE 1: Malaria Prevention, Surveillance, and Early Detection and Containment of Epidemics

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
Re-emergence of transmission prevented (in transmission-free areas and where transmission has been interrupted)	<ul style="list-style-type: none"> <li>Number of transmission-free countries with routine monitoring system for imported malaria cases and deaths and reporting annually to PAHO</li> <li>Number of malaria</li> </ul>	<ul style="list-style-type: none"> <li>Sub-regional Focal point updates</li> <li>Country Reports from the Ministry of Health</li> <li>Sentinel site Reports</li> </ul>	<ul style="list-style-type: none"> <li>PAHO Regional Malaria Program</li> <li>Sub-regional Focal Points</li> <li>Country Focal Points</li> <li>Sentinel Site Personnel</li> <li>Partner Institutions and Organizations</li> </ul>

“... and we strive to do relevant work timely and right.”

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>Mortality and morbidity due to malaria reduced by 50% in the 21 endemic countries by 2010</p>	<p>outbreaks in the transmission-free areas and areas where transmission has been interrupted</p> <ul style="list-style-type: none"> <li>• Number of endemic countries with routine monitoring system for malaria cases and deaths and reporting annually to PAHO</li> <li>• Number of countries (among the 21) with 50% reduction in morbidity and mortality due to malaria</li> </ul>	<ul style="list-style-type: none"> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> </ul>
<p>Malaria elimination efforts in progress in endemic countries considered ready for malaria elimination</p>	<ul style="list-style-type: none"> <li>• Number of endemic countries considered ready for malaria elimination pursuing elimination efforts</li> </ul>	<ul style="list-style-type: none"> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> </ul>
<p>System and exchange of epidemiologic information strengthened and improved at the regional level, among countries with common borders, and within countries themselves</p>	<ul style="list-style-type: none"> <li>• Number of countries with routine monitoring system for malaria cases and deaths and reporting annually to PAHO</li> <li>• Number of malaria-endemic localities along border areas sharing epidemiologic information</li> <li>• Number of countries that meet (PAHO's) baseline requirements for epidemic alert capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
Disparity and inequality of results in malaria prevention reduced	<ul style="list-style-type: none"> <li>• Proportion of the relative share of each sub-region and country in the total number of cases in the region</li> <li>• Proportion of the relative share of each special population groups (e.g. pregnant women, children, persons living with HIV/AIDS, travelers, miners, loggers, banana and sugarcane plantation workers, indigenous groups, populations in areas of armed conflict, &amp; people along areas of common epidemiologic interest/border areas) in the total number of cases in the region</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Regional, sub-regional, inter-country, inter-institutional, inter-agency, inter-sectoral, and other forms of networks in malaria prevention, and the early detection and control of epidemics promoted, supported, and strengthened	<ul style="list-style-type: none"> <li>• Number of active networks/collaborations on malaria in the region</li> <li>• Number of countries actively involved in malaria network/collaborations in the region</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Institutional, network, and country readiness to manage special situations enhanced	<ul style="list-style-type: none"> <li>• Number of countries with relevant guidelines on management of specific malaria situations</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> </ul>

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
Capabilities in research and development of technologies and tools relevant to malaria prevention, surveillance, and early detection and containment of epidemics further strengthened	<ul style="list-style-type: none"> <li>• Number of countries issuing timely advisories regarding their particular special situations</li> <li>• Number of countries with a clear and well-implemented research agenda that gives adequate focus on malaria prevention, surveillance, and early detection and containment of epidemics</li> </ul>	<ul style="list-style-type: none"> <li>• TDR Reports</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• Partner Institutions and Organizations</li> <li>• Regional TDR Unit</li> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>

## OBJECTIVE 2: Integrated Vector Management

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
Vector Management efficiently and effectively included as a component of malaria prevention and control among countries	<ul style="list-style-type: none"> <li>• Number of countries with vector management efficiently and effectively integrated as a component of malaria prevention</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Use of more environment-friendly vector management options advocated	<ul style="list-style-type: none"> <li>• Number of countries using environment-friendly vector management options</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Country-specific problems and interventions on vec-	<ul style="list-style-type: none"> <li>• Number of malaria-endemic countries implementing</li> </ul>	<ul style="list-style-type: none"> <li>• Network Progress Updates and Work Plans</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional</li> </ul>



Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>tor management addressed</p> <p>Adequate recruitment, training, and retention of integrated vector management-trained personnel in the health system promoted</p> <p>Integrated Vector Management (IVM) implemented in the various levels of work (global, regional, sub-regional, national, community)</p> <p>Interest and support on Integrated Vector Management (IVM) research increased</p>	<p>appropriate integrated vector management</p> <ul style="list-style-type: none"> <li>• Number of active and well-trained integrated vector management-trained personnel in each of the countries</li> <li>• Number of countries implementing Integrated Vector Management (IVM)</li> <li>• Number of countries that do research on Integrated Vector Management (IVM)</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<p>Focal Points</p> <ul style="list-style-type: none"> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>

### OBJECTIVE 3: Malaria Diagnosis and Treatment

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>Regional network(s) in the diagnosis of malaria and in the surveillance of anti-malarial drug resistance further developed and strengthened</p>	<ul style="list-style-type: none"> <li>• Number of active networks/collaborations on malaria diagnosis and treatment in the region</li> <li>• Number of countries</li> </ul>	<ul style="list-style-type: none"> <li>• Network Progress Updates and Work Plans</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> </ul>

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>Accessibility, equity in coverage, efficiency, effectiveness of, and adherence to malaria diagnosis and treatment regimens increased</p>	<p>implementing revised/updated diagnostic and treatment guidelines on malaria</p> <ul style="list-style-type: none"> <li>• Number of countries actively involved in knowledge-sharing on malaria diagnosis and treatment</li> <li>• Number of health facilities per population at risk where appropriate diagnostic tests and treatment regimens are available</li> <li>• Relative cost of diagnosis and treatment to the affected population</li> <li>• Proportion of completed treatments relative to the number of reported cases</li> <li>• Proportion of countries with endemic <i>P. falciparum</i> malaria deploying artemisinin-based combination therapy obtaining them from a pre-qualified manufacturer</li> <li>• Proportion of countries with endemic malaria conducting regular surveys of antimalarial drug quality</li> <li>• Proportion of countries with endemic <i>P.</i></li> </ul>	<p>the Ministry of Health</p> <ul style="list-style-type: none"> <li>• Updated Country diagnostic and treatment guidelines</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• Partner Institutions and Organizations</li> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>Institutional, network, and country readiness to perform and manage appropriate and adequate malaria diagnosis and treatment in special situations enhanced</p> <p>Capabilities in research and development of technologies and tools relevant to malaria diagnosis and treatment further strengthened</p>	<p><i>falciparum</i> malaria deploying artemisinin-based combination therapy with an operational system of pharmacovigilance</p> <ul style="list-style-type: none"> <li>• Number of countries with relevant guidelines on management of special malaria situations</li> <li>• Number of countries with a clear and well-implemented research agenda that gives adequate focus on malaria diagnosis and treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> <li>• TDR Reports</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> <li>• Regional TDR Unit</li> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organization</li> </ul>

#### OBJECTIVE 4: Enabling Environment for Malaria Prevention and Control

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>Development and coverage of networks extended to include all 21 malaria endemic countries, under-represented sectors, and target populations</p>	<ul style="list-style-type: none"> <li>• Number of active malaria networks/collaborations in the region</li> <li>• Number of countries actively involved in networks/collaborations in the region</li> <li>• Number of countries involved in active malaria networks/collaborations in the</li> </ul>	<ul style="list-style-type: none"> <li>• Network Progress Updates and Work Plans</li> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>Opportunities for synergy with other existing WHO/PAHO initiatives optimized</p>	<p>region that include the academe and other under-represented sectors</p> <ul style="list-style-type: none"> <li>• Number of countries involved in active malaria networks/colaborations in the region which covers target populations</li> <li>• Number of inter-programmatic and synergistic work with other PAHO initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Biennial Program Budget and other similar documents</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Communicable Disease Unit</li> <li>• PAHO Regional Malaria Program</li> </ul>
<p>Participation and involvement of the NGO's and the community increased in various levels of work in malaria and in managing special situations</p>	<ul style="list-style-type: none"> <li>• Number of NGO's and community-based groups focusing/involved in malaria work (regional, sub-regional, national, grass-roots)</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
<p>Capabilities in research and development of technologies and tools relevant to the promotion of an enabling environment for malaria prevention and control</p>	<ul style="list-style-type: none"> <li>• Number of countries with a clear and well-implemented research agenda that gives adequate focus on the promotion of an enabling environment for malaria prevention and control</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
<p>Opportunities for continuous regular coordination and knowledge-sharing in all levels of work (regional, sub-regional, and national) promoted and enhanced</p>	<ul style="list-style-type: none"> <li>• Annual number of malaria coordination-related meetings (regional and sub-regional)</li> </ul>	<ul style="list-style-type: none"> <li>• Regional and Sub-regional Adviser Trip Reports</li> <li>• Official Transcripts of Meetings</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> </ul>

## OBJECTIVE 5: Health Systems Strengthening/Country-Level Capacity Building

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
Adequate recruitment, training, and retention of malaria-trained personnel in the health system ensured	<ul style="list-style-type: none"> <li>• Number of active and well-trained malaria personnel (malariologist/communicable disease specialist, public health specialist, epidemiologist, entomologist, etc.) per population at risk in the 21 endemic countries</li> <li>• Number of countries using evidenced-based information in determining policy</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Country capacities to manage special situations enhanced	<ul style="list-style-type: none"> <li>• Number of countries with relevant guidelines on management of special malaria situations</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Relevant guidelines established and efforts on monitoring and evaluation of programs increased	<ul style="list-style-type: none"> <li>• Number of countries implementing appropriate/relevant malaria program/intervention monitoring and evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Availability and accessibility of health infrastructure to the most affected populations increased	<ul style="list-style-type: none"> <li>• Number of health facilities per population at risk with adequate malaria prevention, control, diagnostic, and treatment capabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
Management, logistics, and financial capabilities of the country programs developed	<ul style="list-style-type: none"> <li>• Number of countries (among the 21) with clear, relevant, and fully-functioning malaria program</li> <li>• Number of countries with approved and successfully implemented GFATM proposals</li> <li>• Amount of resources mobilized/generated for malaria, in addition to funds provided by the government</li> <li>• Projected budget per person at risk of malaria in each of the 21 endemic countries</li> <li>• Number of countries actively involved in knowledge sharing</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-regional Focal point updates</li> <li>• Country Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> <li>• GFATM Country Program Reports/Monitoring and Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>
Implementation of Global Fund Projects in the region assisted and results optimized	<ul style="list-style-type: none"> <li>• Percentage of countries with Global Fund Projects receiving technical assistance from the regional program</li> <li>• Percentage of countries that gives favorable assessment of the technical assistance they receive from the regional program</li> </ul>	<ul style="list-style-type: none"> <li>• GFATM Country Reports</li> <li>• Sub-regional Focal point updates</li> <li>• Country Focal point updates</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points, Partner Institutions and Organizations (Direct Program Recipients)</li> </ul>
Benefits of operational research in program development and management promoted and emphasized	<ul style="list-style-type: none"> <li>• Number of countries conducting relevant operational research and program development activities</li> </ul>	<ul style="list-style-type: none"> <li>• Operational Research Outputs/Reports</li> <li>• Sub-regional Focal point updates</li> </ul>	<ul style="list-style-type: none"> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> </ul>

Outcomes/Component Objectives	Indicators	Products/Means of Verification	Responsibility Within PAHO/WHO
<p>Capabilities in research and development of technologies and tools relevant to health systems strengthening and country-level capacity building further strengthened</p>	<ul style="list-style-type: none"> <li>• Number of countries with a clear and well-implemented research agenda that gives adequate focus on health systems strengthening and country-level capacity building</li> </ul>	<ul style="list-style-type: none"> <li>• Country Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> <li>• Sub-regional Focal point updates</li> <li>• Country Focal point updates</li> <li>• Country Reports from the Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>• Partner Institutions and Organizations</li> <li>• PAHO Regional Malaria Program</li> <li>• Sub-regional Focal Points</li> <li>• Country Focal Points</li> <li>• Partner Institutions and Organizations</li> </ul>

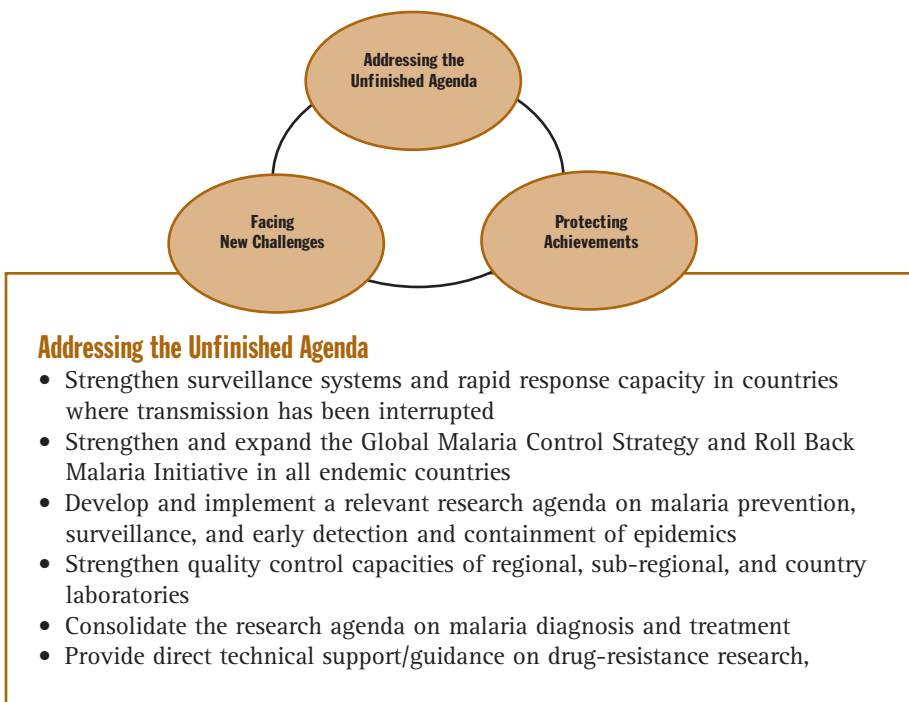




# Framework for Technical Cooperation: Priority Lines of Activities of the Regional Malaria Program

Consistent to the Pan American Health Organization 2003-2007 Strategic Plan's framework for technical cooperation (Figure 11) which will likewise be used for the 2008-2013 period, the Regional Malaria Program outlines its priority lines of activities to *address the unfinished agenda*, *protect the achievements*, and *face new challenges* on malaria in the region.

**Figure 11: PAHO's Strategic Framework for Technical Cooperation**



“... and this is how we move forward...”

effectiveness studies on diagnostic tests, and treatment protocol/regimen adherence

- Strengthen and promote the expansion of the coverage of present partnerships and collaborations (e.g. RAVREDA and DDT-GEF) to include all 21 endemic countries and under-represented sectors and target populations
- Extend technical assistance in the consolidation of national policies and strategic plans on malaria and related concerns
- Extend technical assistance in monitoring and evaluation of malaria-related efforts
- Optimize knowledge-sharing capabilities and mechanisms among countries of the region

### **Protecting the Achievements**

- Maintain and strengthen existing multi-country, multi-institutional, and multi-sectoral malaria networks
- Lobby for increased support of existing networks, enhance the availability of their outputs, and encourage countries to optimize their usage
- Advocate and encourage the involvement of the NGO's and the participation of the affected communities in malaria work
- Advocate and support research endeavors and the adoption of appropriate policies that promote an enabling environment for malaria prevention and control.
- Spearhead the conduct of the biennial national malaria program leaders' conference and support similar activities in the sub-regional and national levels

### **Facing New (Emerging and Re-emerging) Challenges**

- Advocate and support elimination efforts in endemic countries considered as possible candidates for malaria elimination
- Adopt appropriate policies and strategies on malaria prevention; surveillance; and the early detection and containment of epidemics, including those that are essential to target population groups and special situations
- Integrate vertical malaria surveillance to general health surveillance system and set-up mechanisms for a more efficient exchange of epidemiological information among and within nations of the region
- Promote the integration of malaria programs within the health system; synergize with other programs (e.g. other vector-borne disease programs, and Antenatal Control and Expanded Program of Immunization); and advocate the optimum use of available resources (e.g. insecticide-treated nets)
- Advocate the inclusion of provisions for special situations (e.g. epidemics, complex emergencies, urban malaria, malaria in remote and border areas, and low-incidence areas where elimination may be possible) in national malaria program plans
- Extend technical assistance in the consolidation and implementation of national policies and strategic plans on integrated vector management

- Promote and provide technical assistance in the recruitment and training of integrated vector management-trained personnel
- Collaborate with other Vector-borne Disease Programs on vector management- related research
- Advocate, promote, and support adoption of appropriate policies concerning malaria diagnosis and treatment in all levels of governance, considering among others, the situation of specific target populations, and special situations
- Promote the use/allocation of PAHO's Strategic Fund for collective purchase of anti-malarial drugs and other supplies to lower cost of treatment and ensure drug quality
- Efficiently use existing measures/mechanisms (e.g. use of the COMBI approach to increase treatment adherence) to optimize desired outputs
- Promote and provide technical assistance in the recruitment and training of malaria-trained personnel
- Integrate malaria programs within the health system and assist in developing the capabilities of the system in addressing malaria-related challenges including provisions for special populations and specific situations
- Provide technical assistance and training on malaria program management, operational research, and related competencies
- Provide technical assistance to countries in the implementation of their respective Global Fund Projects

To realize its goals, the Regional Malaria Program commits itself to a comprehensive and balanced range of activities for 2006-2010 and beyond. These activities include:

#### **1. Regional Leadership and Coordination**

- Leadership of/participation in various alliances and networks
- Liaison for WHO's Global Malaria Program with national programs
- Coordination with various PAHO programs for regional inter-programmatic efforts
- Holding of regular coordination meetings of malaria professionals and health workers in the region, including the proposed biennial meeting of Epidemiologists and National Malaria Program Directors

#### **2. Research, Information Services and Knowledge-Sharing**

- Continuous updating of the regional malaria epidemiologic database and function as a regional repository of malaria information
- Facilitate the consolidation, publishing, and dissemination of relevant regional data
- Consolidation and implementation of the Malaria Research Agenda for the Americas

### 3. Technical Cooperation, Coordination, and Support

- Extension of various technical services, particularly in matters related to surveillance systems strengthening and development of rapid response capacity; elimination efforts in endemic countries deemed ready for malaria elimination; malaria-related research and laboratory quality control (including drug quality control); access to and availability of diagnostic and treatment measures; program monitoring and evaluation; policy development and strategic planning; program synergy; health systems integration; networking; country capacity building (including procurement, distribution, and management of supplies); resource mobilization; and the implementation of Global Fund and other projects

### 4. Policy and Advocacy

- Review and analysis of current policies relevant to various levels of work in malaria
- Advocacy for integration of pro-active policy measures such as those that concern disaster management and emergency preparedness
- Advocacy for integrated vector management
- Advocacy to bridge gaps between policy and program implementation
- Advocacy for vulnerable population groups
- Active partnership with potential country and community champions from different sectors
- Regional coordination of the proposed “World Malaria Day”

### 5. Training

- Active partnership with potential regional implementing partners
- Direct training of managers and decision-makers, particularly on matters related to the various aspects of malaria program management, personnel recruitment and development, and related competencies
- Development of relevant training modules/programs

# Annexes



## Annex A: Causes of Persistence of Malaria Transmission in the 21 Countries: 2000 – 2004

Country	2000	2001	2002	2003	2004
Mexico	...	Migration from malarious areas of Central America; poor housing conditions; sociopolitical factors; late detection and treatment of cases.	Same as 2001	No report	Migration from malarious areas of Central America; poor housing conditions in areas inaccessible to detection, diagnosis and treatment opportunities; habit of the population to remain outside housing during the schedule of increased hematophagous activity of the anophelines; sociopolitical problems that impede access to programs (Chiapas and Oaxaca); illegal activities that prevent identification of cases in places of infection.
Belize	...	...	...	No report	Poor housing conditions; Population movement.
Costa Rica	...	Border areas with heavy illegal migratory movements; asymptomatic infections; increasing number of susceptibles; high precipitation.	Same as 2001	Intensive migration of unstable labor and undocumented persons; asymptomatic carriers and increase in number of susceptibles in banana plantations and in flood prone and high rainfall areas; Increase of the demand and reduction in resources in marginal settlements.	Same as 2003
El Salvador	...	Migration; commerce between neighboring countries; border visits.	Same as 2001	...	No report

Country	2000	2001	2002	2003	2004
Guatemala	...	Lack of political commitment to implement Global Malaria Control Strategy in local health services; lack of budgetary resources allotted to malaria; limited coverage of General Health Services in malaria endemic areas; priority given to dengue programs; little education in malaria prevention and control; migratory population; little inter-sectorial co-operation.	Same as 2001	Extensive migration; increase in population; insufficient operational personnel; little implemented educational activities; insufficient educational material; insufficiency in the financial resource, materials, and equipment.	No report
Honduras	...	Lack of stratification in control strategies; lack of supervision due to budgetary constraints; Lack of funds and resources; unsustainable actions; lack of personnel in high risk areas.	Same as 2001	Migrations; unprotected housing; presence of breeding sites among rice culture and livestock areas; little community participation.	Migrations; existence of breeding sites and unprotected dwelling; cultural beliefs; presence of several species of vectors in the major transmission areas.
Nicaragua	...	Technical deficiencies; inadequate drug supply.	Same as 2001	Lack of administrative vehicles; and insecticide inputs.	Same as 2003
Panama	...	...	...	...	Technical and cultural problems.
Haiti	...	...	...	No report	...
Dominican Rep.	...	Migration between Dominican Republic and Haiti; favorable conditions for mosquito vector; rice cultivation.	Same as 2001	Mosquito vector; rice cultivation.	Permanent migratory movements of sugarcane workers; and favorable ecological conditions for the reproduction of Anopheles.
French Guiana	...	...	...	Mobility of population in frontier zone; poor housing conditions; isolated populations.	...
Guyana	...	Delay in the release of	Same as	Uncontrolled mining	Same as 2003



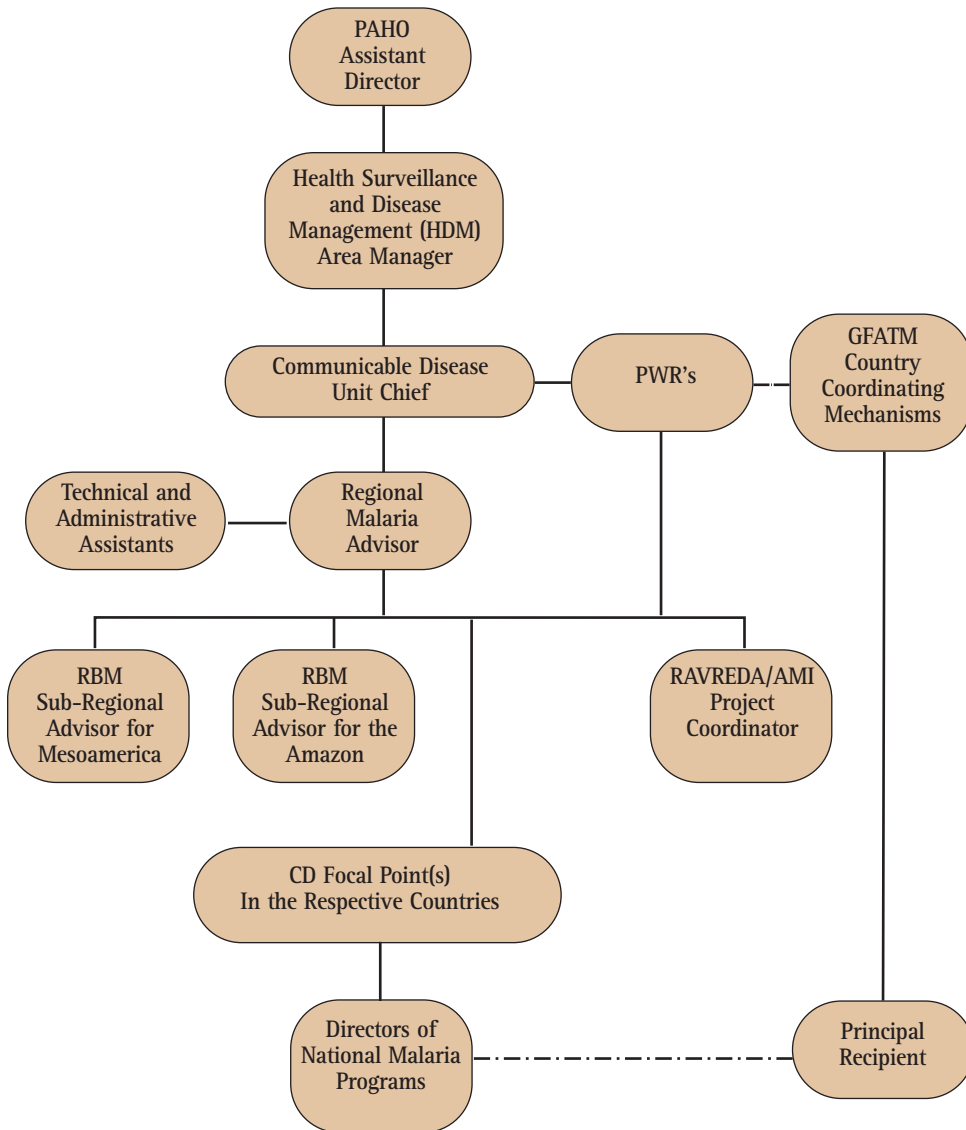
Country	2000	2001	2002	2003	2004
		funds; lack of experienced staff; lack of appropriate transportation; itinerant population of miners and loggers; high rate of non-compliance with drug regimens; makeshift housing of itinerant groups offers little to no insecticide sprayable surfaces.	2001	and logging in the far, difficult to traverse and virtually inaccessible areas of Guyana; Itinerant nature of indigenous population, and miners and loggers; Presence of sylvatic <i>A. darlingi</i> ; Non-compliance with National Anti-malaria Drug Regimens resulting in interrupted/broken/incomplete treatment; Self-medication with "bush medicines" or expired or wrong anti-malaria drugs or with incomplete doses of recommended and free available anti-malarials.	
Suriname	...	...	...	...	...
Brazil	...	All of the epidemiological risk factors that determine malaria transmission in ecological areas of rain forests with remote farms, mining areas and intense internal migration. All of the epidemiological risk factors that determine malaria transmission in ecological areas of rain forest. Lack of basic sanitation in human settlements in the periphery of urban centers. Circulatory/migratory movement of people to and from cities.	Same as 2001	...	...
Bolivia	...	Dynamic migration	Delays in	Favorable environ-	Same as 2003

Country	2000	2001	2002	2003	2004
		related to economic activities.	approval and execution of the Amazon Project.	mental factors; high migration; makeshift dwellings; and subsistence economy. Dynamic migration; Arroyo Las Arenas as primary risk area with 52 permanent breeding sites. Presence of auriferos deposits in the hill of San Simón, which has a border with Brazil to the east of Bolivia, that attracts a large cosmopolitan population, that induces outbreaks in the area, & spreads cases to other places. Administrative decentralization process in the municipalities; management problems; disruptions in the continuity of actions due to Dengue outbreaks in the same regions as Malaria. Diversion of focus of the health workers by the outbreak of dengue which occurred in the city of Cover which borders with Brazil; and lack of economic support of the prefecture and municipalities.	
Colombia	...	Sociopolitical factors; mining, migration and displacement; lack of health services; illegal crops.	Sociopolitical factors; mining; migration and displacement.	Population migration due to armed conflict, drug-trafficking, and violence; Non-sustainability of actions; little social commitment and little social mobilization.	Same as 2003
Ecuador	...	Climatic phenomena;	Same as	Insufficient/incom-	Same as 2003

Country	2000	2001	2002	2003	2004
Peru		migration; insufficient spaying; insufficient fumigation; ineffective insecticide.	2001	plete measures; lack of sustainability of control measures; increase of poverty and marginality; adverse climate phenomena; resistance to therapeutic schemes.	
	...	Climatological factors; inadequate access to health services; increase in breeding sites; expansion in rice production; internal and external migration; emergence of drug resistance to <i>P. falciparum</i> in endemic areas; decreased vector susceptibility to insecticides on the north coast.	...	No report	No report
Venezuela	...	Dispersal of the indigenous population; transient miners; <i>P. falciparum</i> resistance to chloroquine; intense migration in endemic zones; Endophagic and exophilic vectors; Lack of human and financial resources.	Same as 2001	Population dispersion; indigenous population; mobile mining population; Chloroquine resistance of <i>P. falciparum</i> ; endophagic-exophilic vector; intense migration to malarious areas; administrative difficulties; human and financial resources. Immigrants of Guyana, of the mines of Edo. Bolivar and indigenous population; dispersion of the population; populations far from the hospital and control centers and those accessible only through water transport; great deficiency of human and financial resources in the control program;	Same as 2003

Country	2000	2001	2002	2003	2004
Argentina	...	Heavy internal and international migration; areas difficult to reach due to climatic factors; economic and financial constraints on program activities.	Same as 2001	existence of areas of illegal mining exploitation; migration of displaced Colombians; indigenous population ...	...
Paraguay	...	Personnel and resources inadequate to respond to outbreaks	Personnel and resources inadequately placed to respond to the epidemic	...	...

# Annex B: The Regional Malaria Program Coordination Chart



GFATM (Global Fund to fight AIDS, TB, and Malaria)

RAVREDA/AMI (Amazon Network for the Surveillance of Antimalarial Drug Resistance/Amazon Malaria Initiative)

RBM (Roll Back Malaria)

**Note:**

Because of the complex nature of malaria as a public health challenge from the global, regional, national, and grassroots perspectives, this coordination chart should not be interpreted in any way other than the purpose for which it is intended. Broadly, the chart graphically clarifies the flow of responsibilities and accountabilities among individuals/offices in the different levels of work from the perspective of the Regional Malaria Program. This diagram does not necessarily reflect a subsidiary relationship.

Specifically, the chart outlines how information flows in the program, as well as how technical assistance and other efforts are carried out from the regional level onwards.

The inclusion of the GFATM Country-Coordinating Mechanism (CCM) and Principal Recipients in the chart is in response to the resolution adopted by the 46th PAHO Directing Council in September 2005 which mandates PAHO through the Regional Malaria Program to “assist Member States, as appropriate, in the implementation of projects financed by the Global Fund to Fight AIDS, Tuberculosis, and Malaria”.

This chart is primarily for the use of the Regional Malaria Program.

# Annex C:

## Participants in the Consultation on the Regional Strategic Plan for Malaria

Held in San Jose, Costa Rica in November 7, 2005 during the Meeting of National Directors of Epidemiology and Malaria Programs

Name	Country	Designation/Institution
Mario Oscar Zaidenberg	Argentina	Ministerio de Salud y Ambiente- Coordinación Nac. de control de vectores
Natalia Rodríguez	Belize	Profesional Nacional OPS- Proyecto DDT/ GEF
Juan Roberto Márquez Córdoba	Bolivia	Responsable Nacional Malaria, Ministerio de Salud y Deportes
José Walter Agreda Coca	Bolivia	Director Prevención y Control de Enfermedades. Ministerio de Salud y Deportes
Marco F. Suárez	Bolivia	OPS/OMS- Consultor de Enfermedades Transmisibles
Cesar Ayala Gonzáles	Bolivia	Fondo Global- Gerente de programas malaria – tuberculosis
Carlos José Mangabeira da Silva.	Brazil	Consultor Programa Nacional de Control de Malaria, Ministerio Salud
Roberto Montoya	Brazil	Consultor Proyecto RAVREDA OPS
James Fitzgerald	Brazil	Coordinador del Fondo Estratégico OPS
José Pablo Escobar	Colombia	OPS/OMS Asesor
José Luis Garcés	Costa Rica	Coordinador Malaria, Vigilancia de la Salud, Ministerio de Salud
Anabelle Alfaro Obando	Costa Rica	Coordinadora CCSS Comisión Nacional Malaria
Lilliana Jiménez Gutiérrez	Costa Rica	Jefe de Laboratorio Referencia Malaria, Ministerio de Salud
Henry Wasserman T.	Costa Rica	Vigilancia de la salud. Ministerio de Salud

Name	Country	Designation/Institution
Ricardo Torres	Costa Rica	Asesor Salud y Ambiente, Coordinador Proyecto DDT/GEF -OPS
Humberto Montiel Paredes	Costa Rica	Consultor en Epidemiología- OPS
Wilmer Marquiño Quezada	Costa Rica	Asesor sub-regional de Malaria, OPS
Rodrigo Marín Rodríguez	Costa Rica	Director Área Regional de Salud Talamanca- Ministerio de Salud
José Sucre Dávila Vásquez	Ecuador	Sub-director Técnico de Malaria, Ministerio de Salud
Wilson Cando Caluña	Ecuador	SNEM- MSP
Herber Gregorio Aparicio Gonzáles	El Salvador	Coordinador Nacional del Programa de Malaria, Ministerio de Salud
Lilian Angélica Cruz Escobar	El Salvador	Coordinadora Nacional de Epidemiología, Ministerio de Salud
Romeo Humberto Montoya A.	El Salvador	Profesional Nacional OPS
Jaime Juárez Sandoval	Guatemala	Profesional Nacional, Proyecto DOT/GEF- OPS
Carmen Cerezo Mosquera	Guatemala	Gerente Proyecto de Malaria, Visión Mundial, R.P. Fondo Mundial
Emilio Ramírez Pinto	Guatemala	Coordinador Regional Proyecto DDT/GEF/- OPS
Indal Rambajan	Guyana	Director, Ministry of Health
Karanchand Krishnalall	Guyana	Inspector Vector Control Service malaria
Luis Valdes García	Guyana	Punto Focal PAHO
Tamara Mancero Buchelli	Guyana	Consultora Malaria OPS
Antoine Fadoul	Haití	Project Director- Malaria (PR/ GFATM)
Marie Denise Milord	Haití	Coordinadora de programas Ministerio de Salud-
Nora Girón	Honduras	Consultora Nacional, Medicamentos Esenciales- OPS
Martín Iván Sinclair Gutiérrez	Honduras	Consultor Coordinador Proyecto DDT /GET- OPS
Martin Alejandro Enríquez Ramos	Honduras	Epidemiólogo Secretaría de Salud



Name	Country	Designation/Institution
José Orlando Solórzano G.	Honduras	Director general vigilancia de la salud, Secretaría de Salud
Mary Janne Cálix Brooks	Honduras	Coordinadora del componente malaria, Fondo Global
Delmin Cury	Honduras	Asesor Enfermedades Transmisibles – OPS
Víctor Alberto	Honduras	Administrador Programa Malaria-Fondo Global
Laura Julia Salgado Elvir	Honduras	Secretaría de Salud, Jefe del Programa de Malaria
Julio Rosales Caballero	Nicaragua	Responsable Nacional Programa de Malaria, Ministerio de Salud
Aída Mercedes Soto Bravo	Nicaragua	Profesional nacional OPS
Maria Naxalia Zamora González	Nicaragua	Técnica especialista en malaria-Nicasalud Proyecto Fondo Global
Washington Lum Chong	Panamá	Jefe de Epidemiología, Ministerio de Salud
Lorenzo Cáceres Carrera	Panamá	Consultor Nacional OPS
Carlos Victoria	Panamá	Jefe de la Sección de Malaria, Ministerio de Salud
Lorenzo Cáceres Carrera	Panamá	Consultor Nacional OPS
Blanca Mariza Cousiño	Paraguay	Coordinadora de técnicas de programa, Ministerio de Salud
Antonieta Rojas de Arias	Paraguay	Consultora Nacional- OPS
Humberto Recalde Gamara	Paraguay	Director SENEPA, Ministerio de Salud Pública
Yeni Herrera Hurtado	Perú	Estrategia Sanitaria Nacional Ministerio de Salud
Luis Miguel León García	Perú	Ministerio de Salud- Estrategia Nac. de prevención y control de enfermedades metaxenicas
Joaquina Rosario De la Cruz	Rep. Dominicana	Dirección General de Epidemiología
Celia Riera Betancourt	Rep. Dominicana	OPS/OMS- Epidemióloga

Name	Country	Designation/Institution
José Manuel Puello Montero	Rep. Dominicana	Director General Centro Nacional de Control de Enfermedades Tropicales
Gustavo Dos Santos Bretas	Suriname	RBM Cuenca Amazónica
Jesús Toro Landaeta	Venezuela	Director General de Salud Ambiental, Ministerio de Salud
Leopoldo Villegas Álvares	Venezuela	Coordinador RAVREDA OPS
María Lourdes Barrios	Washington D.C	Project Coordinator on Malaria, PAHO
Keith Carter	Washington D.C.	Regional Advisor on Malaria, PAHO
John Patrick Ehrenberg	Washington D.C.	Chief, Communicable Disease Unit, PAHO
Rainier Palino Escalada	Washington D.C.	Consultant, Regional Malaria Program, PAHO
José Parisi	Washington D.C.	Consultant on Quality Assurance, PAHO
Charles Delacollette	WHO- Geneva	Coordinator, RBM Department WHO

## Acronyms

AFI	Annual <i>P. falciparum</i> Index
AMI	Annual <i>P. malariae</i> Index
AMRO	Regional Office for the Americas
API	Annual Parasitic Index
AVI	Annual <i>P. vivax</i> Index
CAPB	Central America, Panama and Belize
CD	Communicable Disease Unit
CDC	United States Centers for Disease Control and Prevention
COMBI	Communication for Behavioral Interventions
DDT-GEF	Regional Action Program and Demonstration of Sustainable Alternatives for Malaria Vector Control without Using DDT in Mexico and Central America
GEF/UNEP	Global Environment Facility / United Nations Environmental Program
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GFATM CCM	Global Fund to Fight AIDS, Tuberculosis, and Malaria Country Coordinating Mechanism
GMCS	Global Malaria Control Strategy
GUY-FGU-SUR	Guyana, French Guiana, and Suriname
HA	Health Analysis and Statistics Unit
HAI-DOR	Haiti and Dominican Republic
HDM	Area of Health Surveillance and Disease Management
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
IVM	Integrated Vector Management
MSH	Management Sciences for Health
NGO	Non-Governmental Organization
PAHO	Pan American Health Organization
PASB	Pan American Sanitary Bureau
RAVREDA/AMI	Amazon Network for the Surveillance of Anti-malarial Drug Resistance / Amazon Malaria Initiative
RBM	Roll Back Malaria
SDE	Area of Sustainable Development and Environmental Health
TDR	Special Program for Research and Training in Tropical Diseases
UN MDG	United Nations Millennium Development Goal
USAID	United States Agency for International Development
USP	United States Pharmacopeia
WB	World Bank
WHA	World Health Assembly
WHO	World Health Organization





**Pan American  
Health  
Organization**

*Regional Office of the*  
World Health Organization