



Pan American Health Organization

Regional Office of the
World Health Organization



Counting Malaria Out: Progress of Efforts in the Americas and More Stories of Innovations

2010
Counting **Malaria** Out



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CENTER FOR GLOBAL HEALTH

THE GEORGE WASHINGTON UNIVERSITY MEDICAL CENTER
WASHINGTON DC

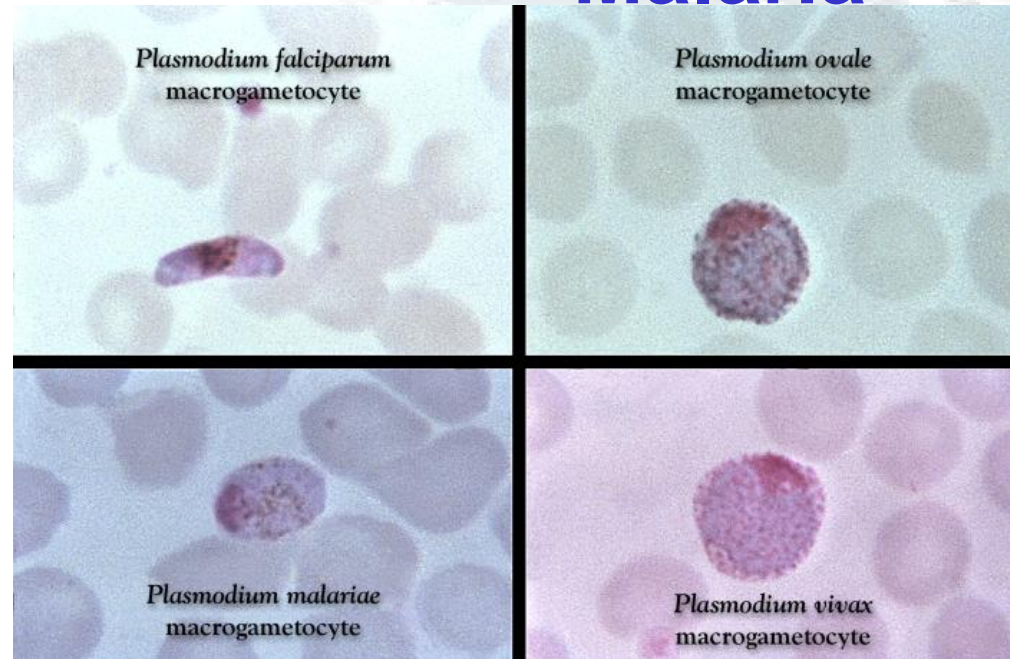


Malaria: A Review

Counting Malaria Out in the Americas

Introduction to Malaria

Malaria is a disease caused by a parasite of the genus *Plasmodium*. More than 150 species of *Plasmodium* affect different vertebrates, but only four (*P. falciparum*, *P. vivax*, *P. ovale* & *P. malariae*) affect man. The two most common species are:

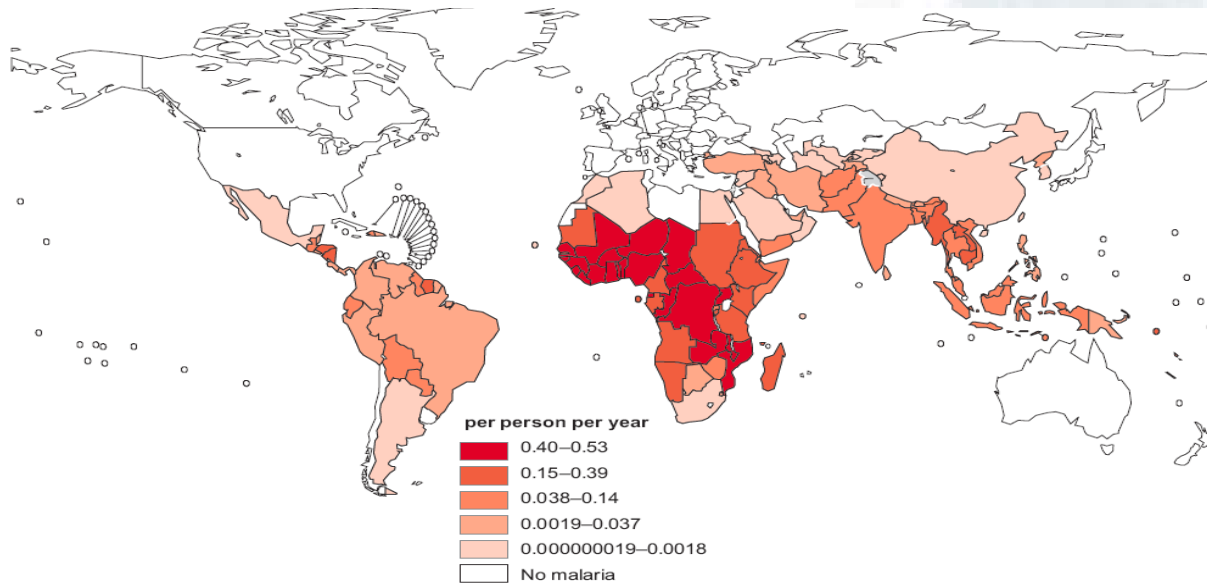


Source: <http://phil.cdc.gov/phil/details.asp>

- *P. falciparum* – which has a global distribution, but is more common in Africa – the most aggressive species, death results principally by coma or anemia.
- *P. vivax* – globally distributed – can or cause infections which can be recurrent but rarely death.

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Global Distribution of Malaria



Map 3. Estimated incidence of clinical malaria episodes—caused by any species—resulting from local transmission, country level averages, 2004 (2)

- As of 2008, 108 countries had areas at risk of malaria transmission
- Half of the world's population is at risk of malaria
- An estimated 243 million malaria cases occurred in 2008
- An estimated 863, 000 malaria deaths occurred in 2008; 767, 000 of those (89%) occurred in Africa.
- Regional patterns of transmission and disease vary markedly between regions and countries

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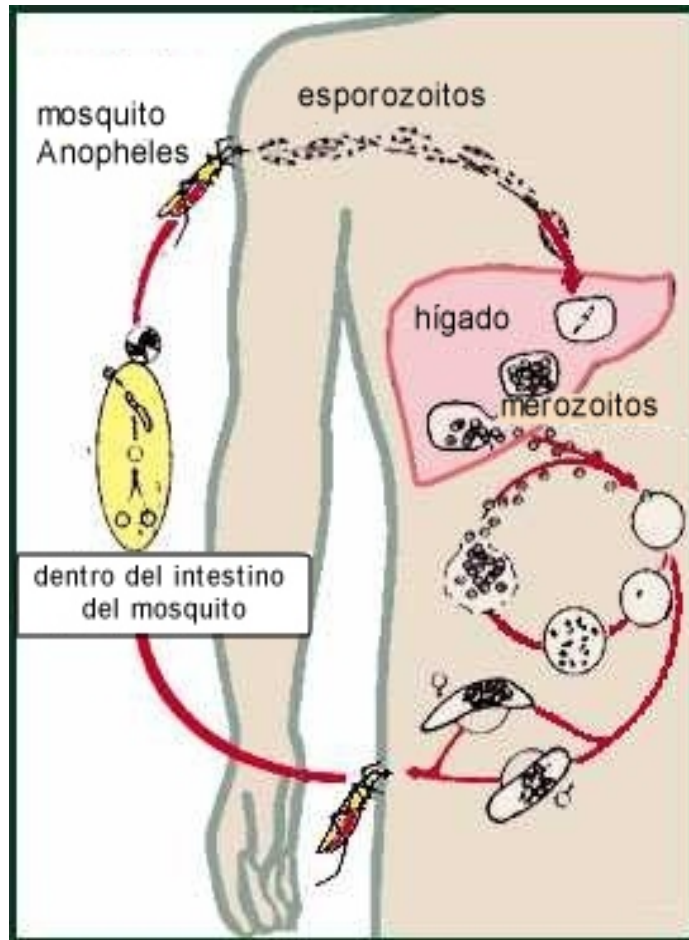
Vectors and Patterns of Spread

- Malaria is transmitted by the bite of a mosquito of the genus *Anopheles* infected by *Plasmodium*. Only females have a blood meal, and are responsible for disease transmission.
- They are capable of being infected and permit the complete sporogonic cycle of *Plasmodium*
- Malaria is not exclusively tropical but a global problem
- Climatic changes (with subsequent increase in environmental temperature) and population movement can alter the situation



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Life Cycle of the Malaria Parasite: An Overview



- Anopheles bites infected person and ingests gametocytes; sexual multiplication takes place; sporozoites develop and migrates to salivary glands
- When the mosquito inoculates parasites in a new host, these first colonize the liver where various asexual multiplication cycles occur and from which they leave to invade red blood cells (erythrocytes)
- Within the erythrocytes, the parasites reproduce asexually (schizogony); blood cells burst, clinical symptoms result; Some parasites within the red blood cells transform into gametocytes, the sexual form of Plasmodium.
- Fever is the first symptom, is cyclical and is the result of destruction of infected red blood cells
- Fever can easily reach 41°C, with shivering. Some hours later, fever drops and shivering stops.
- Between two and four days later (depends on the species of Plasmodium), cycle repeats.

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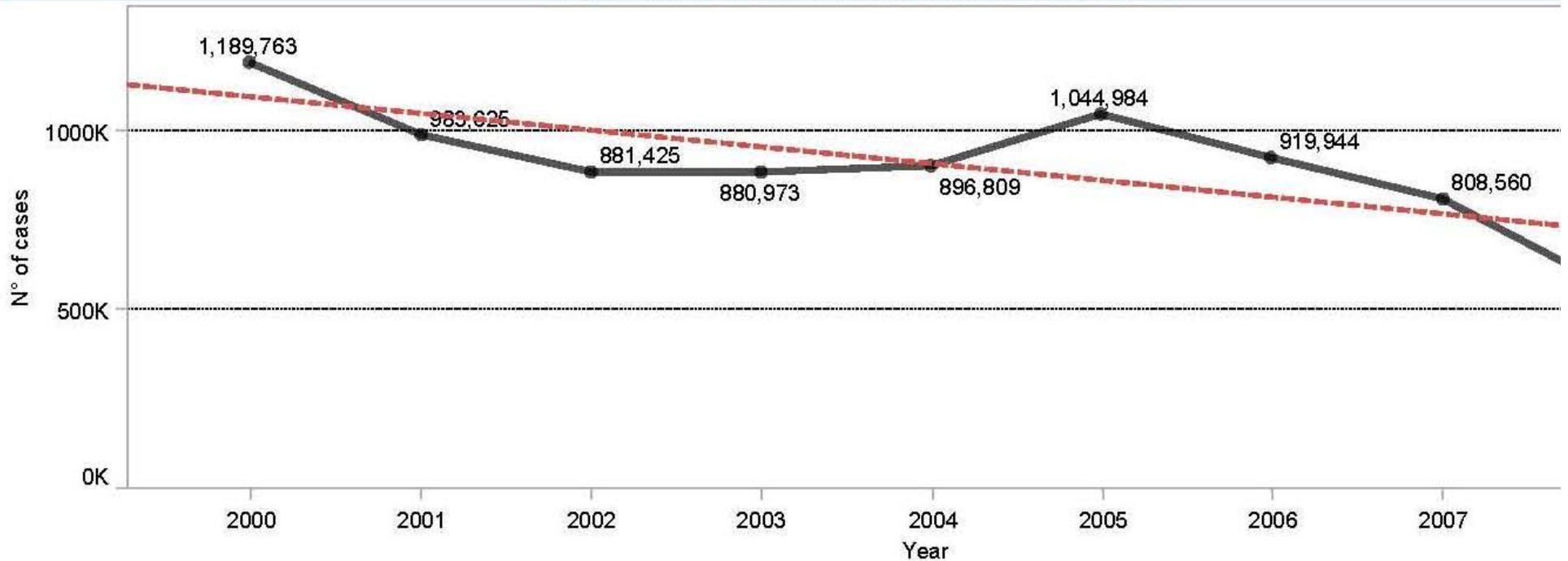


Malaria burden in the Americas

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Epidemiological Situation

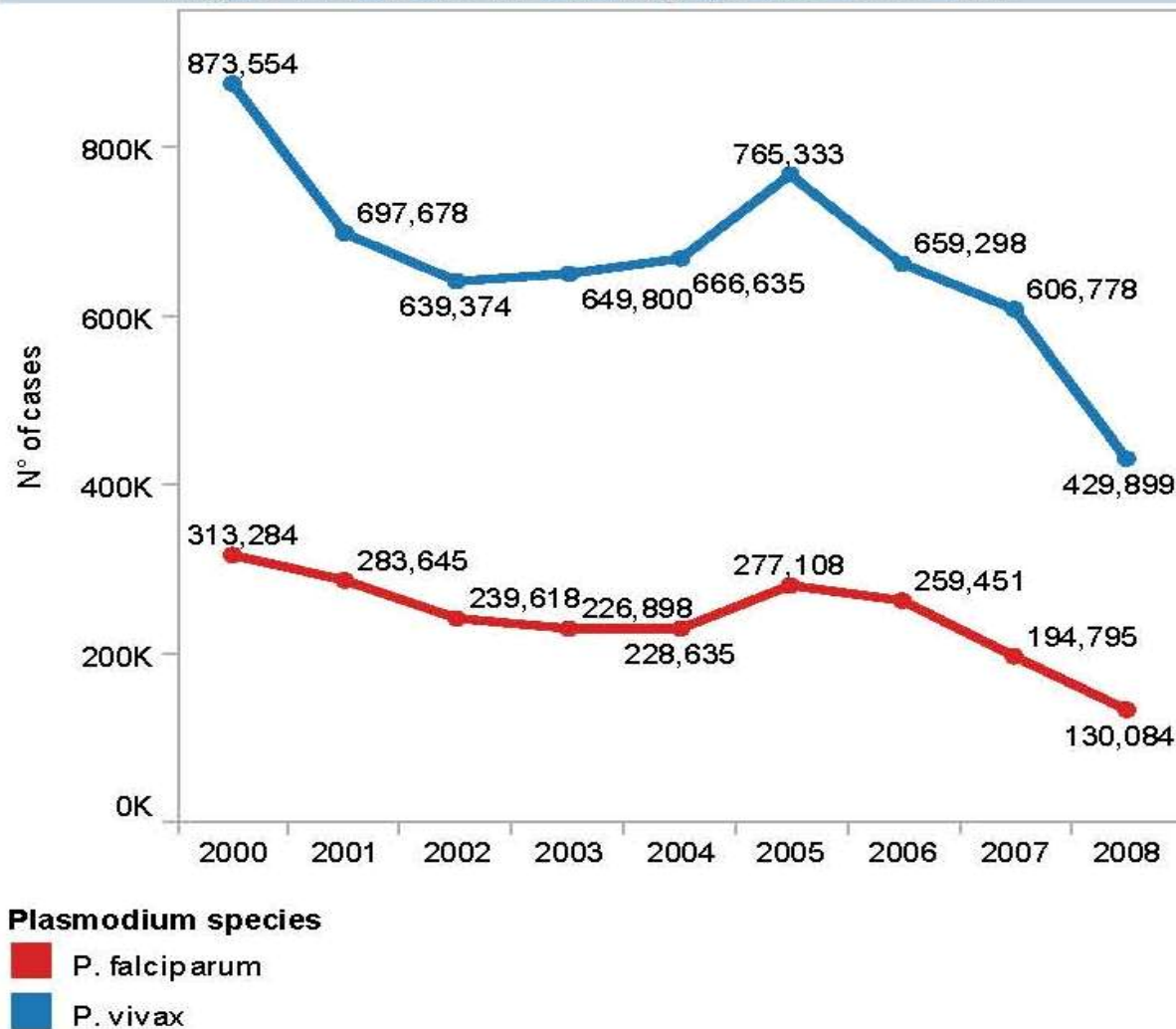
Figure 13. Number of malaria cases 2000 - 2008



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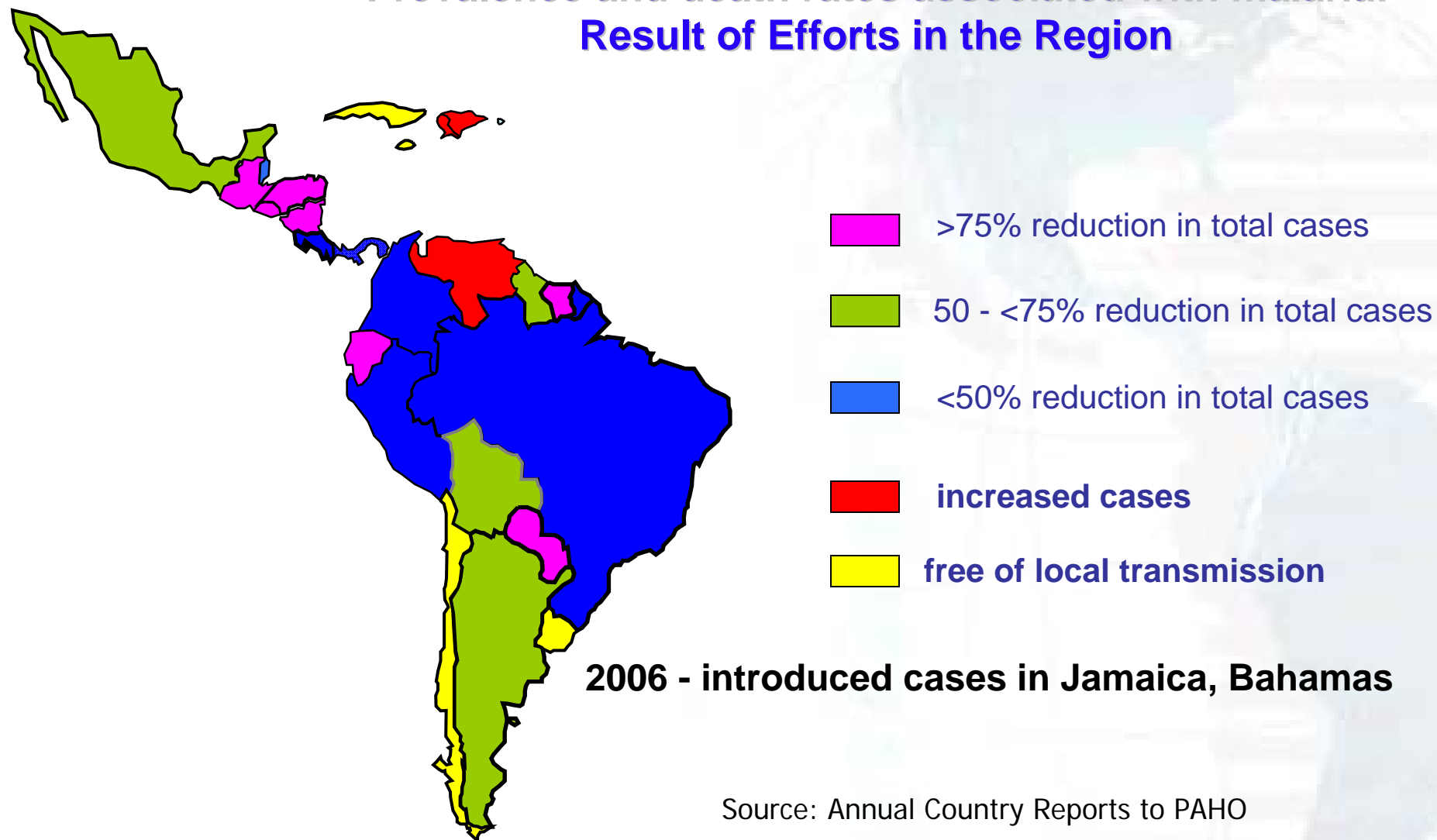
Malaria Cases by Parasite Species

Figure 9. Number of cases by specie 2000-2008



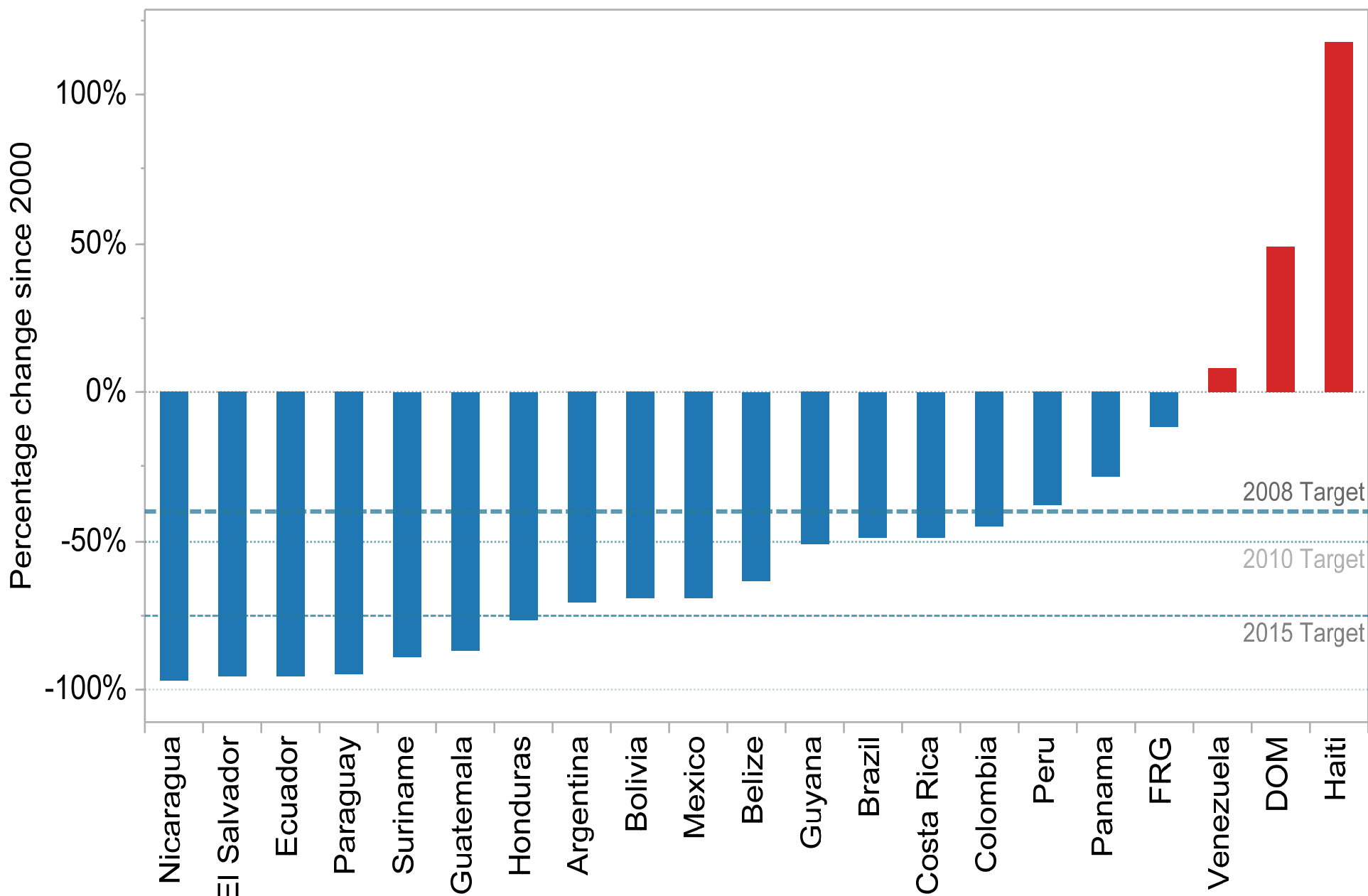
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UN MDG 6 - Target 8 Indicator 21 - Prevalence and death rates associated with malaria: Result of Efforts in the Region



53% reduction of cases in the Americas - 2008 (n=560,888)
75% reduction in mortality

Figure 1: Change in Malaria Incidence in Americas, 2000-2008



DOM- Dominican Republic, FRG- French Guiana

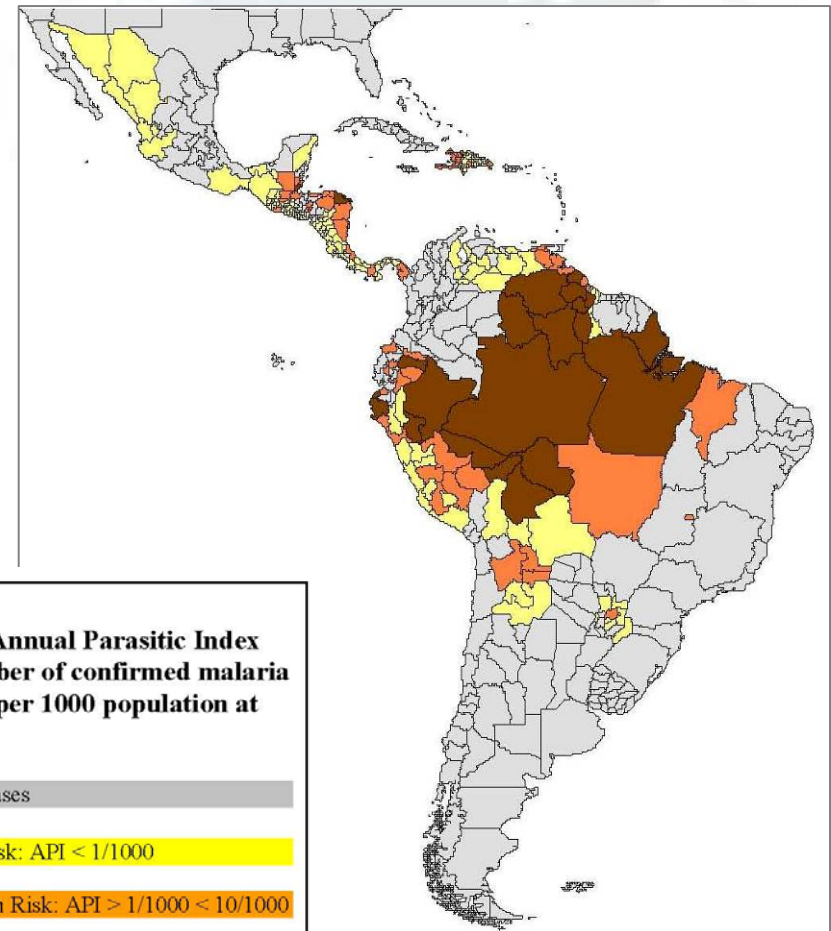
UN MDG 6 - Target 8 Indicator 22: Proportion of population in malaria-risk areas using effective malaria prevention and treatment measures

Insecticide Treated Nets and Long Lasting Insecticide Treated Nets:

- >2 million bed nets distributed between 2004 to 2008 (26% of high risk population)

Anti-malarial Drugs:

- Treatment Policy Changes to use of Artemisinin-based Combination (ACT) in 8 countries in the Amazon
- Diagnosis and first line treatment for malaria is available in all 21 endemic countries and are generally free



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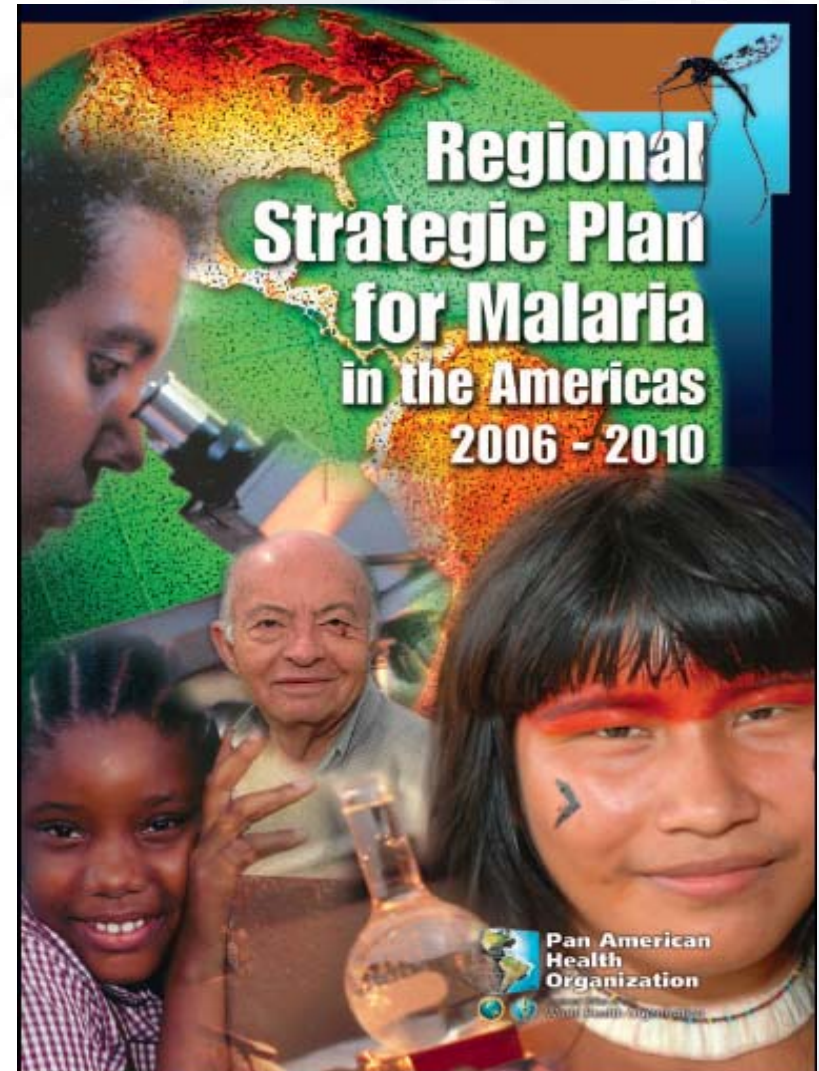
More Innovations that make a difference...

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Regional Strategic Plan for Malaria in the Americas 2006-2010

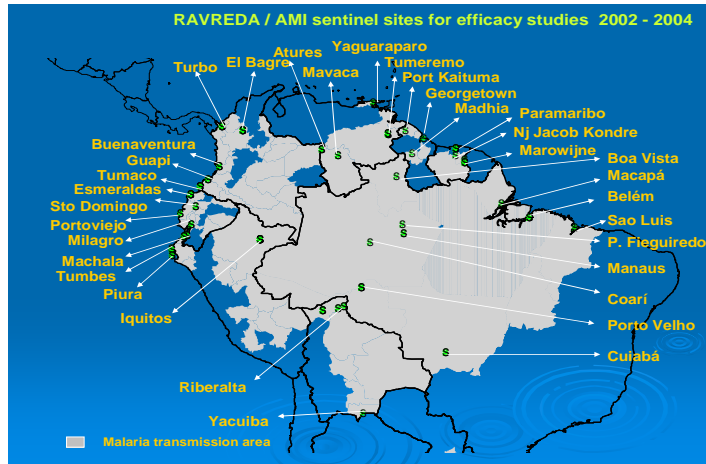
Components

- A. Prevention, Surveillance, Early Detection and Containment of Epidemics
- B. Integrated Vector Management
- C. Diagnosis and Treatment
- D. Enabling Environment for Malaria Prevention and Control
- E. Health Systems Strengthening / Country-Level Capacity Building

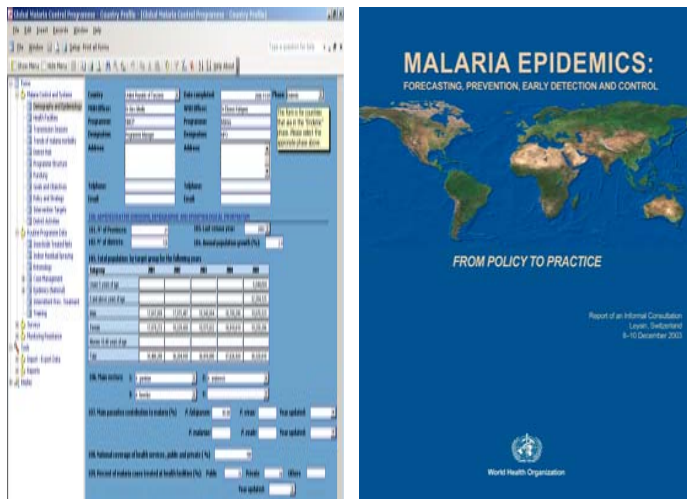


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Malaria Prevention, Surveillance and Early Detection and Containment of Epidemics

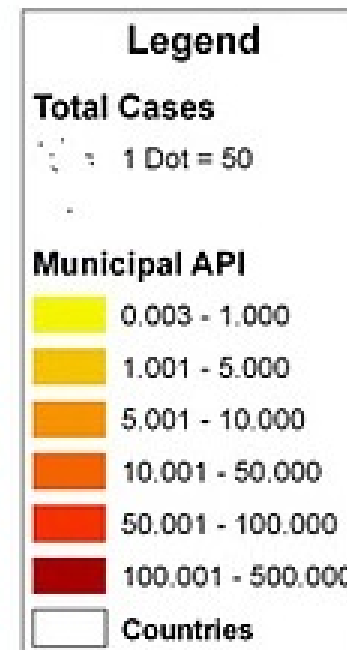
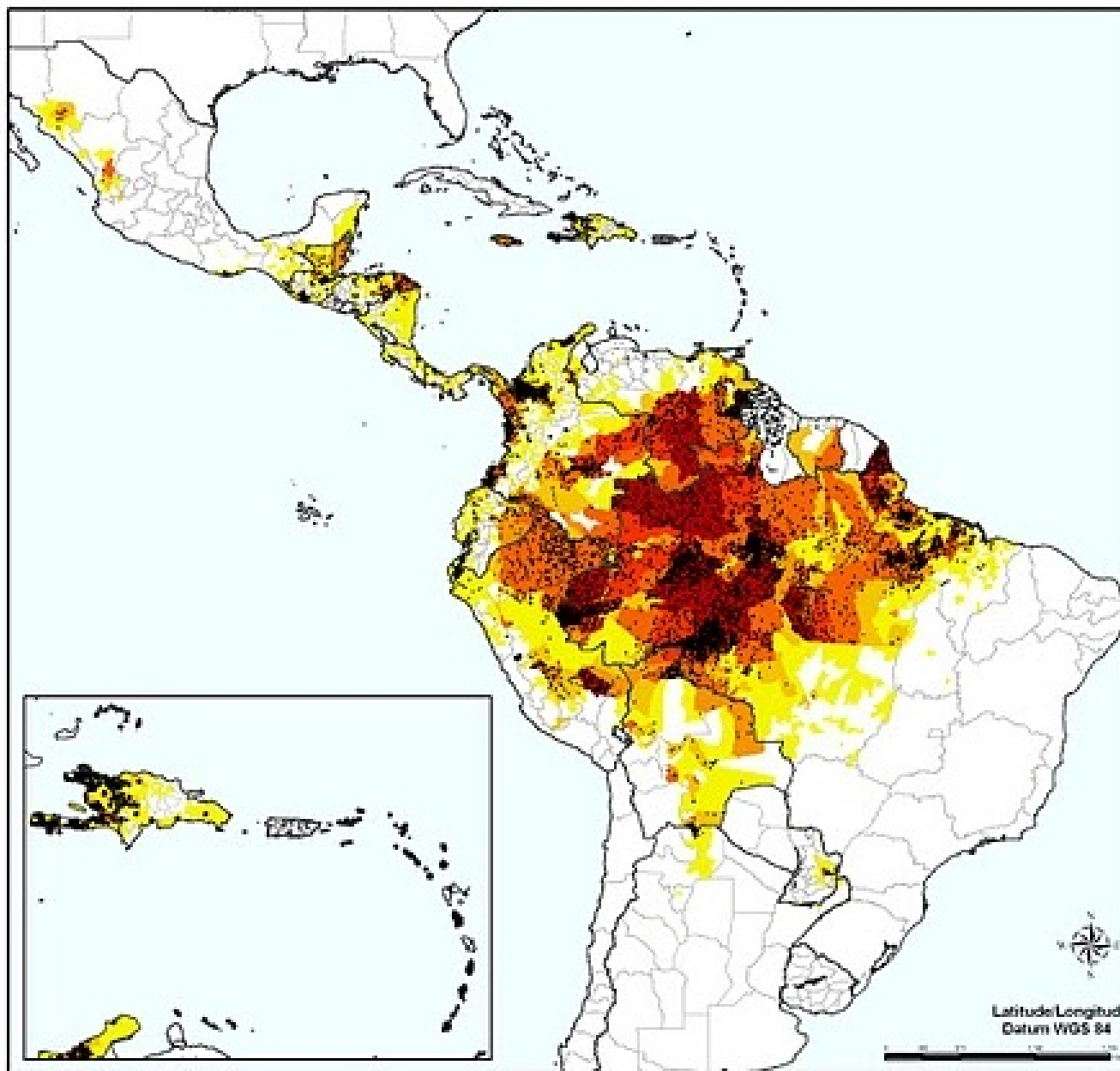


- Malaria Surveillance Guidelines
- WHO Global Malaria Database
- World Malaria Report
- Annual Report on the Situation of Malaria in the Americas
- Fostering multi-country, multi-institutional, and multi-sectoral networks
- Provisions / focus on special situations (e.g. mining population, indigenous groups, etc.)
- Research / Evidence-based decision making



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Malaria Distribution in the Americas - Second Sub-National Level -



Malaria Report 2008

Source:
PAHO/HSD/CD

Malaria Vaccine Development

- One vaccine, RTS,S/AS01, may be licensed in 2012-2015
- 55% efficacy against clinical malaria in recent trial (Bejon et al. NEJM 2008)
- Major uncertainties about its potential role in malaria control and in immunization programmes
- WHO Policy Recommendation and Prequalification critical steps

Malaria Vaccine Development

- 1 vaccine has demonstrated efficacy repeatedly in phase 2 field trials at 30-55%
- Phase 3 underway – scheduled to complete 2014
- Policy process initiated with ongoing engagement with vaccine development partnership
- Earliest Policy Recommendation - around 2015
- Recommendation will depend on Phase 3 data

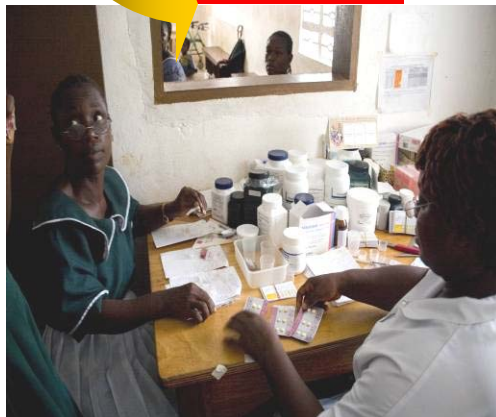
Integrated Vector Management

- Reinforcing country capacities in implementing effective malaria vector control measures (ITNs / LLNs; Indoor Residual Spraying; use of environment friendly alternatives)
- Integrated Vector Management as an approach to address multi-vector-borne disease challenges
- Functional training on entomology for malaria field workers
- Research / Evidence-based decision making (e.g. insecticide resistance, etc.)



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Malaria Diagnosis and Treatment

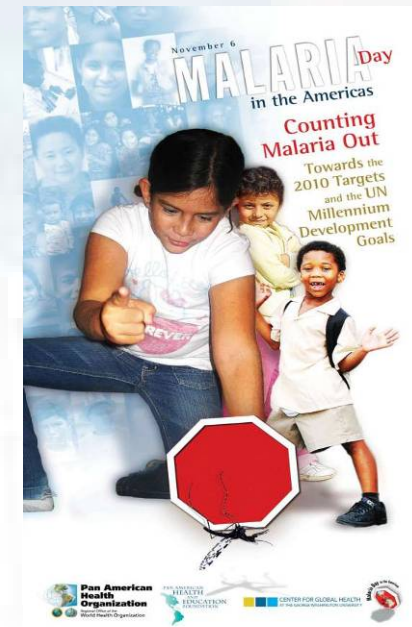
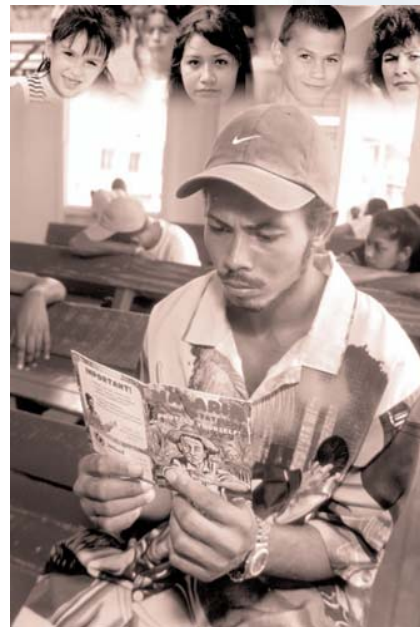


- Holistic approach to malaria case management
 - Surveillance of anti-malarial resistance (in vitro; in vivo; molecular markers)
 - Drug policy implementation (including adherence by health providers and patients)
 - Access to and quality assurance in diagnosis and treatment (supply chain management, etc.)
- Revisions / Updating of Malaria Diagnosis and Treatment Guidelines(2010)
- Research / Evidence-based decision making

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Enabling Environment for Malaria Prevention and Control

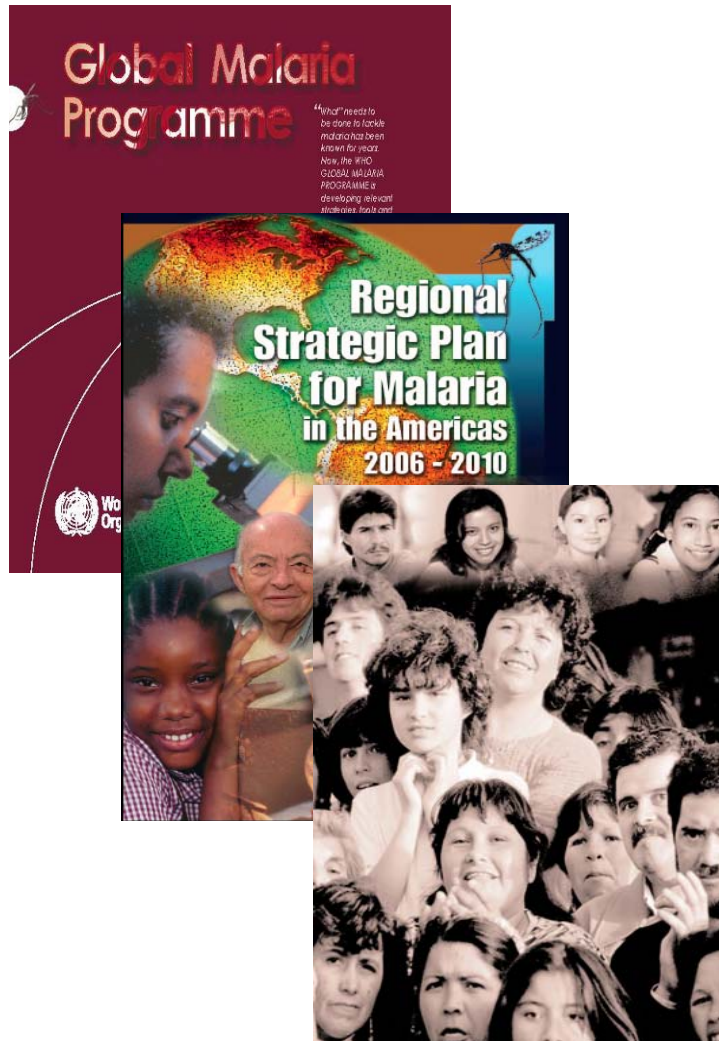
- Strong community participation and multi-sectoral involvement
- Strengthened advocacy / communications efforts regarding important issues on malaria prevention and control (for various audiences and levels of work)
- Presence and involvement of “champions” in the field



Project DDT/GEF

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Health Systems Strengthening / Country Capacity Building



- Robust policy development, strategic planning and efficient implementation of effective interventions
- Human resource management – appropriate recruitment and training of malaria personnel
- Strengthened technical and management capabilities (including coordination, knowledge-sharing, etc.)
- Strengthened capacity in resource mobilization and absorption (proposal development and project implementation)
- Research / Evidence-based decision making

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Challenges

- ✓ **Stronger and continuing commitment of countries and various sectors in the context of declining number of cases and continuing gaps (e.g. malaria prevention and control in mobile populations? Transitioning from control to elimination?);**
- ✓ **Surveillance, monitoring and evaluation;**
- ✓ **To increase investments of all stakeholders to malaria work in the Region;**
- ✓ **To build on the momentum of Advocacy efforts;**

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**WORLD
MALARIA
DAY**

Malaria Day in the Americas



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MALARIA CHAMPIONS OF THE AMERICAS

Seeks to identify, celebrate, and provide avenues to emulate best practices and success stories in malaria prevention and control



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Thank you.

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