

# AMAZON MALARIA INITIATIVE

## SUCCESS STORY/LESSONS LEARNED

### ADVANCEMENTS IN COLOMBIA: STRENGTHENING PREVENTION AND CONTROL OF MALARIA IN CHOCÓ, COLOMBIAN PACIFIC COAST, 2006 – 2009

Between 2004 and 2005, a quarter of all malaria deaths in Colombia occurred in the remote region of Chocó. In 2006, an increase in the number of malaria cases and deaths in Chocó prompted the region's health officials to take action. A comprehensive set of interventions was implemented beginning in January 2006, supported by the United States Agency for International Development's Amazon Malaria Initiative (AMI).<sup>1</sup> These interventions are proving to be effective, and over the last four years, Chocó has cut the overall number of new malaria cases nearly in half and overcome the threat from *Plasmodium falciparum*.

*P. falciparum* (historically the predominant malaria parasite in the region) is the parasite species responsible for a more severe, potentially fatal, form of malaria, compared to *P. vivax*. The malaria burden in the Amazon Basin subregion worsened beginning in the 1990s with the increased prevalence of *P. falciparum*.<sup>2</sup>

**“Chocó has cut the number of new malaria cases nearly in half and turned the clock back on *Plasmodium falciparum*.”**

– DASALUD Chocó.

Chocó has experienced an increase in the percentage of *P. falciparum* to *P. vivax* cases until 2007. As shown in Table 1, from 2005-2009 the percentage of *P. falciparum*



Photo Credit: DASALUD Chocó

**Many of the people in Chocó work outdoors in activities such as agriculture, fishing, mining, or wood extraction and are constantly exposed to the risk of malaria. Chocó, Colombia, 2009.**

cases (out of all types of malaria) decreased from 70% to 36% and the number of new cases of malaria was cut nearly in half, from 14,378 in 2005 to 8,276 in 2009, effectively turning the clock back on malaria.<sup>3</sup>

The Colombian Ministry of Social Protection (Ministerio de Protección Social) led the effort with the support from the Chocó Administrative Department of Health (Departamento Administrativo de Salud Chocó, DASALUD Chocó), the Colombian National Institute of Health (Instituto Nacional de Salud), and the Colombian Mission of Pan American Health Organization (PAHO). The efforts were also supported by AMI and the Amazon Network for the Surveillance



**A microscopist takes a blood sample for malaria testing in Chocó, Colombia, 2009.**

of Antimalarial Drug Resistance (Red Amazónica para la Vigilancia de la Resistencia a los Antimaláricos, or RAVREDA). Working together, they have reoriented and strengthened malaria control programs while giving priority to localities with the highest concentration of cases, complications, and deaths.

Chocó is a Colombian department<sup>4</sup> located in the northwest corner of South America, bordering the Pacific Ocean, Panama, and the Caribbean Sea. It is one of the wettest regions in the world, raining more than 300 days each year with an average annual rainfall of over 400 inches.<sup>5</sup> The climate, vast number of rivers and lush forests create the perfect environment for mosquitoes to breed and thrive. Here, malaria is considered endemic with high rates of transmission.

The estimated population in the department in 2008 was 467,099. The largest percentage of the population (82.7%) is Afro-Columbian (of African ancestry); the second largest percentage (12%) is of indigenous ethnicity (Emberá, Tule, Wounaan, Katio, and Chami). One-half of the population lives in rural areas (51.4%) and work outdoors in activities such as agriculture, fishing, or extraction of natural resources.<sup>6</sup>

Since 2006, the following actions have been conducted in Chocó to strengthen malaria control and prevention:



**Using a RDT, a microscopist is able to confirm if the patient has malaria. Quibdó, Chocó, Colombia, 2009.**

- Changing the diagnosis and treatment network locations to be closer to the population;
- Applying rapid diagnostic tests (RDTs) in areas of difficult access;
- Strengthening public health surveillance;
- Stratification in the surveillance and control of vectors through the implementation of an entomological study where selected locations represented high malaria transmission levels and allowed for a greater focus on interventions.
- Monitoring the diagnostics network and improving diagnostic quality management;
- Conducting staff training programs;
- Acquiring needed equipment and improving the physical infrastructure;
- Improving the administrative and operational management of the program;
- Adopting in 2006 (in accordance with national guidelines) a combination therapy of artemether + lumefantrine as first-line treatment for uncomplicated *P. falciparum* malaria;
- Implementing a pilot program where residents participated in bed net distribution in the four municipalities with the highest rates of transmission; and,
- Conducting community education programs about the proper use of bed nets.

<sup>1</sup> Hernandez, J., Escobar, J. 2010. Reorientation and strengthening prevention and control of malaria in the department of Choco, Pacific Coast, 2006 – 2009 (Reorientación y fortalecimiento de la prevención y el control de la malaria en el departamento del Chocó, Costa Pacifica colombiana, 2006 – 2009). Bogotá, Colombia: PAHO. Available in Spanish at [http://new.paho.org/col/index.php?option=com\\_content&task=view&id=841&Itemid=361](http://new.paho.org/col/index.php?option=com_content&task=view&id=841&Itemid=361) (accessed on November 1, 2010).

Improvements were also made in the process for reporting cases using data entry, quality control, and information analysis within the system of national public health surveillance (Sistema de Vigilancia en Salud Pública, or SIVIGILA) based on the use of the Tableau® software. A new methodology for making rational decisions on vector control has been implemented, based on the analysis of stratified epidemiological results and entomological surveillance.

The reorientation and strengthening of the program generated several types of capabilities. Among these were the formation of a functional team to manage and implement actions to prevent and control malaria integrally, and a better generation and use of information from local epidemiological and entomological surveillance, using targeting and stratification as a basis for decisionmaking. A best practice was the establishment of alliances with different actors, such as national and international nongovernmental organizations (e.g., Red

Cross, Catholic Diocese of Istmina, International Plan, and Doctors Without Borders) and United Nation entities (e.g., UNICEF). Alliances were also established with municipalities, community organizations, and academic and research institutions, which helped to ensure the program's sustainability, as well as bridge the regulatory gaps within the health system at the national level to adjust to remote regions like Chocó.

The experience in Chocó with AMI/RAVREDA highlights the importance of cooperation projects that strengthen and support self-sustainability through local capacity building. This new approach also recognizes that epidemiological and entomological intelligence should be the guiding light for decisions. The changes allow for the efficient use of resources in programs for the prevention and control of malaria.



Photo Credit: DASALUD Chocó



Photo Credit: DASALUD Chocó

**Long-lasting insecticidal bed nets were installed in dwellings in four municipalities, including Pizarro, Bajo Baudó, and Chocó, Colombia, 2008.**

<sup>2</sup> United States Center for Disease Control and Prevention (CDC). 2010. Activities in the Amazon Region: Malaria in the Amazon Region. [http://www.cdc.gov/malaria/malaria\\_worldwide/cdc\\_activities/amazon.html](http://www.cdc.gov/malaria/malaria_worldwide/cdc_activities/amazon.html) (accessed July 6, 2010) and PAHO 2010.

<sup>3</sup> PAHO. 2010, page 58.

<sup>4</sup> A department is a state or province in Colombia.

<sup>5</sup> Chocó. 2010. In Encyclopedia Britannica. <http://www.britannica.com/EBchecked/topic/113879/Choco>. (Accessed July 26, 2010)

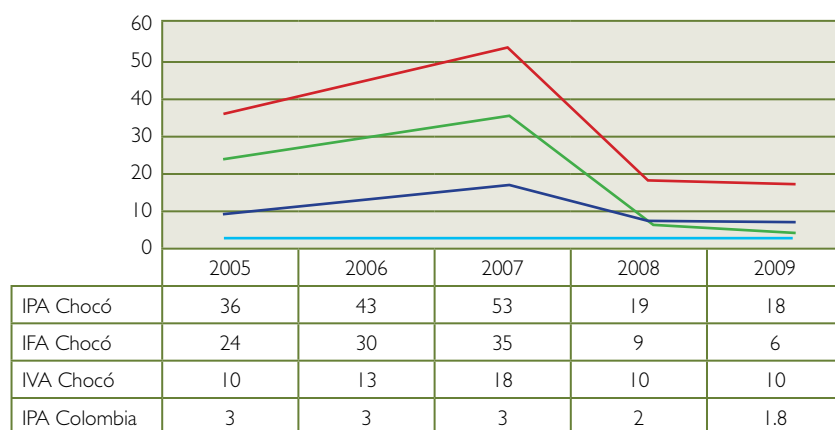
<sup>6</sup> PAHO. 2010, page 17.

**Table 1. Changes in Malaria Behavior in Chocó, Colombia 2005-2009<sup>7</sup>**

	2005	2006	2007	2008	2009+
Chocó*					
Blood Samples Examined	58370	47507	84218	46544	44549
Positive Cases	14378	18101	24513	8669	8276
Cases from <i>P. falciparum</i>	10046	12513	16037	4174	2953
Cases from <i>P. vivax</i>	4182	5588	8476	4495	4788
% cases <i>P. falciparum</i>	69.9	69.1	65.4	48.1	35.7
% cases of national total	11.8	15.1	19.5	10.9	10.4
Cases complicated malaria			33	18	70
Deaths					
DANE	10	17	13	8	2
SIVIGILA+	7	29	1	5	0
Colombia+					
Positive Cases	121,647	120,096	125,443	79,230	79,252
% cases <i>P. falciparum</i>	34.3	36.3	42.9	27.1	27.1

+ Please note: Malaria deaths registered by SIVIGILA are confirmed by laboratory examination, while not all deaths are registered by the Statistics National Administrative Department (Departamento Administrativo Nacional de Estadísticas, or DANE).

**Figure 1. Morbidity by malaria in Chocó, 2005-2009<sup>8</sup>**



**Health staff explain antimalarial dosage and treatment instructions to patients in a health center, Chocó, Colombia, 2009.**

Photo Credit: DASA/LUD Chocó

<sup>7</sup> Sources: (\*) Data from Programa de Enfermedades transmitidas por Vectores Chocó (Chocó Vector-Borne Diseases Program, or ETV Chocó), (+) Sistema de Vigilancia en Salud Pública (System of National Public Health Surveillance, or SIVIGILA), and Departamento Administrativo Nacional de Estadísticas (Statistics National Administrative Department, or DANE) 2009. Available in Spanish at [http://new.paho.org/col/index.php?option=com\\_content&task=view&id=841&Itemid=361](http://new.paho.org/col/index.php?option=com_content&task=view&id=841&Itemid=361) page 57 (accessed on November 1, 2010).

<sup>8</sup> Sources: Data from (1) Sistema de Vigilancia en Salud Pública (System of National Public Health Surveillance, or SIVIGILA), and (2) Programa de Enfermedades transmitidas por Vectores Chocó (Chocó Vector-Borne Diseases Program, or ETV Chocó) 2009. Available in Spanish at [http://new.paho.org/col/index.php?option=com\\_content&task=view&id=841&Itemid=361](http://new.paho.org/col/index.php?option=com_content&task=view&id=841&Itemid=361) page 57 (accessed on November 1, 2010).

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