



Amazon Malaria Initiative (AMI)

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International Partner Highlights

In late 2013, the **Pan American Health Organization (PAHO)** helped Central American countries finalize a concept note based on the AMI/RAVREDA strategic framework and lines of work for submission to the Global Fund, related to the Elimination of Malaria from Mesoamerica and Hispaniola Initiative (EMMIE). The concept note was approved in February 2014. PAHO provided support to train Nicaraguan health workers from different levels in supply chain management for antimalarial medicines and supplies. As part of South-South collaboration, PAHO sponsored entomologists from Honduras to be trained in basic taxonomy at Colombia's National Institute of Health. In South America, PAHO supported Brazil, Guyana, and Suriname's review of their national strategies based on current epidemiological data, and also supported an entomological survey conducted in Suriname.



Photo: Links Media

In March 2014, researchers from the **U.S. Centers for Disease Control and Prevention (CDC)** published an [article](#) with Nicaraguan researchers investigating the prevalence of molecular markers associated with drug resistant *P. falciparum* malaria in specimens obtained from the North Atlantic Autonomous Region of Nicaragua. Molecular surveillance tools are important in the context of the possible emergence of strains of *P. falciparum* that are resistant to Chloroquine (CQ) or sulfadoxine-pyrimethamine (SP) in Central America, both of which are currently used as first-line treatments in the sub region. No resistance has been seen thus far. In late 2013, PAHO procured supplies for CDC bottle tests to be used in Guatemala.

Management Sciences for Health (MSH)/SIAPS released numerous materials, including [Criteria for Planning and Distributing Medicines in Areas with a Low Incidence of Malaria](#), [Evaluation of the Performance of Malaria Control Strategies in Latin America Using Adequacy Criteria](#), and a success story entitled [Guidelines at the Primary Level of Care Help Strengthen Antimalarial Supply Management of the Malaria Diagnosis and Treatment Network in Chocó, Colombia](#). MSH/SIAPS and Links Media adapted an instructional guide for pharmaceutical management in English. Together with PAHO, in February 2014 MSH/SIAPS held a workshop in Suriname to share the results of a study on small-scale gold miners' use of antimalarial medicines and access to proper diagnosis. Workshop participants generated ideas about how to use study findings to change behaviors among itinerant gold miners to prevent or contain the reduced efficacy of artemisinin derivatives, which are currently the standard for treating severe malaria.

TIPS FOR LOWERING PHARMACY TEMPERATURES TO MAINTAIN GOOD MEDICINE QUALITY

Pharmacies that serve health clinics located in tropical areas need infrastructure that will help lower their inside air temperature.
It is very important that medicines are stored below 30°C, remembering that certain medicines must be stored at temperatures below 25°C. Higher temperatures tend to change medicine quality, which can harm the patients who need them.
This guide provides instruction on simple and inexpensive modifications of pharmacy stores to reduce the inside air temperature by up to 4°C.

TIP 1 MONITOR THE TEMPERATURE

You should have a thermometer that is in good working condition. It can be a mercury, digital, or other type of thermometer.

Measure the temperature on a daily basis between 12:00 p.m. and 2:00 p.m. Record the date, time, and temperature in a notebook. This way, you will know if your pharmacy maintains appropriate temperature levels.

Management Sciences for Health (MSH)/Systems for Improved Access to Pharmaceutical Services (SIAPS) is responsible for the content of this material, which does not necessarily reflect the views of USAID or the United States Government.
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Image: Links Media



The **U.S. Pharmacopeial Convention (USP)**'s Promoting the Quality of Medicines (PQM) program had commentary featured in the March edition of *Malaria Journal* entitled, [Were medicine quality and pharmaceutical management contributing factors in diminishing artemisinin efficacy in Guyana and Suriname?](#) The commentary was coauthored by MSH/SIAPS and USAID/Peru. The article questions whether the quality of antimalarial medicines and the availability and use of non-recommended treatments could have played a role in the reduced efficacy of artemisinin derivatives reported for Guyana and Suriname. However, the authors state that other factors should also be considered, and a more comprehensive, extensive assessment of potential contributing factors is needed to establish a tighter cause-effect correlation. USP/PQM also authored [The Three-Level Approach: A Framework for Ensuring Medicines Quality in Limited-Resource Countries](#), which was published in the March issue of *Pharmaceutical Regulatory Affairs Journal*. The three-level approach, implemented by PQM in several regions of the world and institutionalized in some AMI countries, is a methodology for quality monitoring of medicines that produces valid and trustworthy results in limited-resource settings.



Links Media conducted needs assessments with six countries for communication strategy development and technical assistance, developed media materials and a brochure, and validated a fact-based advocacy and dissemination strategy with AMI partners at the AMI/RAVREDA meeting in Nicaragua. Links Media devised a transcreated version of MSH/SIAPS' instructional guide "Tips for Lowering Pharmacy Temperatures to Maintain Good Medicine Quality" for use by English speakers. The new, illustrated guide suggests low-cost modifications that can be made to medicine storage facilities with the objective of lowering the indoor temperature to preserve medicine quality. Links Media will conduct audience pre-testing prior to deployment in Guyana and Suriname. Links Media maintained the usaidami.org website by gathering content and updates from AMI partners, and actively engaged constituents via social media.

AMI partners joined Roll Back Malaria's three-week [#defeatmalaria](#) campaign for **World Malaria Day**, culminating in Links Media's release of an infographic on AMI's areas of intervention and a live Twitter chat with the President's Malaria Initiative (PMI). MSH/SIAPS staff led a brown bag presentation entitled "Malaria Pharmaceutical Management in Low Incidence Areas: Lessons learned from the Americas," and PAHO launched a call for nominations for its annual [Malaria Champions of the Americas](#) competition, open from April 25 - June 23, 2014.

The **United States Agency for International Development (USAID)**, PAHO, and the Ministry of Health of Nicaragua hosted the XIII AMI/RAVREDA Annual Evaluation and XXV Steering Committee meetings in Managua, Nicaragua from March 11-14, 2014. Key takeaways from the meeting can be summarized as follows.

Regarding malaria in low transmission settings and its elimination:

- In general, countries that aspire to enter the "pre-elimination" phase have work to do towards ensuring that they meet the necessary criteria. Disease surveillance for malaria is indispensable in any epidemiological context, whether risk of transmission is low, medium, or high, and strengthening epidemiological surveillance should be a priority everywhere. Remember that surveillance depends on the reporting system and on the health system's capacity to detect, confirm, and investigate cases within a given clinical, laboratory, and epidemiological capacity.

- Quality-assured microscopy and rapid diagnostic tests remain the primary diagnostic tools in all epidemiological settings, even in areas of low transmission. The use of tools with higher sensitivity should only be considered in low transmission settings that already have broad coverage with microscopy and rapid diagnostic tests.
- It is likely that strains of *Plasmodium falciparum* without the HRP-2 gene will become more common in the region. Particularly in low transmission settings, countries that have shown the existence of *P. falciparum* strains circulating without the HRP-2 gene should choose rapid diagnostic tests (RDTs) that do not depend on the expression of HRP-2, because if this gene is not expressed there may be false-negatives.. When evaluating alternative RDTs, it is recommended to estimate the number of malaria infections that would not have been diagnosed if a certain test was used, consider the sensitivity and specificity of the tests, consider how often the HRP-2 was absent, and look at the estimated prevalence of infection in the area of interest. It should be remembered that all malaria infections in humans can potentially contribute to sustaining transmission, however the available tools for day-to-day diagnosis (microscopy and RDTs) are ineffective at detecting a significant proportion of such infections.
- Vector populations' behavior and susceptibility to insecticides should be monitored in differing epidemiological contexts. Likewise, vector control interventions should be monitored and evaluated to confirm their effectiveness, plan complementary actions (such as the replacement of bed nets or the repetition of indoor residual spraying, IRS), plan modifications (such as changing insecticides or type of bed net), or decide about discontinuation (e.g. stop IRS applications if there is resistance to available insecticides, or if the vectors stop biting inside homes).
- The Strategic Orientation Documents that were distributed in English and Spanish contain valuable practical information that is specifically intended to guide the adaptation of our work to different epidemiological contexts.

On the possible emergence of resistance to artemisinin in the region:

- To date, the emergence of resistance to artemisinin in the Americas has not been confirmed. Confirmatory studies are ongoing in Suriname and Guyana, and will begin in Brazil. Regional collaboration is essential in order to address the possible emergence of artemisinin resistance, and documentation is needed to serve as a reference for the planning of activities. No matter what the results of ongoing confirmatory studies, we must act as if emergence of resistance is occurring. Within this framework, the first step is to ensure that malaria control interventions are implemented adequately and to reinforce the actions among subpopulations at greatest risk. Only then will we be able to delay the eventual emergence or spread of resistance.
- Available information suggests that hard-to-reach subpopulations, particularly those associated with illegal gold mining in the Amazon basin, have a primary role in the emergence of resistance to artemisinin. The challenge is ensuring these subpopulations have access to diagnosis and treatment with effective medicines, as well as ensuring that individuals complete the prescribed treatment. Coordinated actions are required by countries with shared borders where subpopulations such as gold miners and agricultural workers regularly cross, and probably contribute to the emergence and spread of antimalarial drug resistance.
- It is critical to ensure the quality of medicines used to treat malaria, for which the three-level approach is an important tool. First level tests can be conducted by anyone with minimal training, and there are field methodologies (or second level tests) for all antimalarial drugs.

Regarding communication and advocacy:

- In order to carry out effective advocacy, those who work in malaria control must provide attractive, simple, and convincing information to people from other sectors or disciplines, and especially to the political leadership, in order that they come to understand the impact of malaria control and help to ensure the long term sustainability of regional collaborative efforts.

Photo: Links Media 2014



Country Spotlight

As part of **Ecuador's** efforts to improve its national quality control system, the country invited the Pan American Health Organization (PAHO) to provide technical assistance to enhance quality control of malaria diagnosis at the local level during the last quarter of 2013.

Guyana has been working to update its national treatment guidelines for malaria and strengthen field training. In December 2013, Guyana provided specialized training for microscopists with the goal of improving the national system for malaria case reporting, with technical cooperation from PAHO.



Photo: PAHO



Photo: PAHO

In February 2014, the National Malaria Reference Laboratories of **Honduras** and **Peru** in coordination with PAHO carried out the first training workshop and certification of microscopists based on the External Quality Assurance Program for malaria microscopy in the Americas (EQAP). Honduras' National Laboratory of Public Health, Peru's National Institute of Health, and PAHO's Regional Malaria Program, together with Mexico's Institute of Epidemiological Diagnosis and Reference (InDRE) whose new facilities were used to host the workshop, acted as instructors and provided technical support to help strengthen the capacity for malaria microscopy diagnosis among national staff from Mesoamerican and Caribbean countries. Participants from Belize, Costa Rica, El Salvador, Guatemala, Haiti, Mexico, Nicaragua, Panama, Dominican Republic, and the Caribbean Public Health Agency (CARPHA) received training and certification. The workshop sought to equip national staff with the theoretical processes and practical skills needed for microscopy diagnosis and quality assurance, so that they could in turn replicate the training for local staff at national laboratories in the region. The collaboration of PAHO/Mexico office was key for the event's organization and coordination, supported by the authorities of the Ministry of Health of Mexico.



Photo: PAHO

In **Nicaragua**, the Minister of Health has worked to prioritize malaria control on a strategic, political, and technical level. A situation report and action plan for malaria control were submitted to the President of the Republic, including a proposal to improve the implementation and follow-up of health services by the National Health Model (MOSAFC) and the Intercultural Health Model of the North Atlantic Autonomous Region (MASIRAAN).

Suriname is in the process of preparing a grant proposal for submission to the Global Fund. As a priority, Suriname seeks to use Global Fund resources to increase the availability and use of mosquito bed nets among itinerant gold miners from neighboring countries.

Global Malaria News

WHO Policy Recommendation on Malaria Diagnostics in Low Transmission Settings

In March 2014, the WHO released a policy document with six recommendations on the role of molecular tools for malaria in low transmission areas, available [here](#).

Vector-Borne Diseases: Controversy around Transgenic Mosquitoes in Brazil

PAHO and other AMI partners raised awareness of vector-borne diseases for World Health Day on April 7, 2014. Of these, dengue has been an increasing problem in recent years. In April, Brazil's Technical Committee on Biosecurity (CTNBio) sparked debate in the research community when it approved of the sale of transgenic mosquitoes for dengue control. Male mosquitoes would have a new gene introduced to prevent their offspring from reaching adulthood, and the larvae would inherit a marker to become visible under a specific type of light in order to facilitate their control. Tests in Bahia state showed the introduction of such mosquitoes reduced *Aedes aegypti* populations by 81% to 93%. However, critics point to: 1) a lack of evidence about the impact on actual dengue incidence; 2) the risk that the mosquitoes released could still transmit dengue; and 3) uncertainty as to whether a drastic reduction in the *Aedes aegypti* population would allow other mosquitoes, such as malaria vectors, to thrive in its ecological niche. The transgenic mosquitoes are still pending registration with Brazil's national regulatory agency Anvisa, however Anvisa's acceptance is considered likely given the Ministry of Health's need to manage major dengue outbreaks. Read more [here](#).

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AMI's flickr page

2014 Events and Meetings

May

World Malaria Conference 2014.
May 1, 2014. Bangkok, Thailand.

ISNTD d3 (Drug Discovery & Development).
May 15, 2014. The International Society for Neglected Tropical Diseases (ISNTD). London, United Kingdom

June

Science of Eradication: Malaria. Malaria leadership development course.
June 1-10, 2014, Basel, Switzerland

August

International Day of the World's Indigenous Peoples.
August 9, 2014

September

AMI/RAVREDA Steering Committee Meeting.
September 2014. Washington, D.C.

Amazonian Conference on Emerging Infectious Diseases.
September 26-28, 2014. Cayenne, French Guiana.

November

American Society of Tropical Medicine and Hygiene 63rd Annual Meeting.
November 2-6, 2014. New Orleans, LA, USA.

Malaria Day in the Americas.
November 6, 2014. Washington, D.C.

American Public Health Association (APHA) 2014 142nd Annual Meeting.
November 15-19, 2014. New Orleans, LA, USA.

Entomology 2014: 62nd Annual Meeting of the Entomology Society of America.
November 16-19, 2014. Portland, OR, USA.

December

International Day of People with Disabilities.
December 3, 2014

Release of WHO's World Malaria Report: 2014

International Migrants Day. December 18, 2014

