

End of Project Report: Amazon Malaria Initiative

September 2017



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SLAPS 
Systems for Improved Access
to Pharmaceuticals and Services

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About SIAPS

The goal of the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program is to ensure the availability of quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes. Toward this end, the SIAPS result areas include improving governance, building capacity for pharmaceutical management and services, addressing information needed for decision-making in the pharmaceutical sector, strengthening financing strategies and mechanisms to improve access to medicines, and increasing quality pharmaceutical services.

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ACRONYMS AND ABBREVIATIONS

AMI	Amazon Malaria Initiative
FDC	fixed-dose combination
IR	intermediate result
MSH	Management Sciences for Health
NMCP	national malaria control program
PAHO	Pan American Health Organization
PY	project year
RAVREDA	Red Amazónica para la Vigilancia de la Resistencia a los Antimaláricos
SIAPS	Systems for Improved Access to Pharmaceuticals and Services (Program)
USAID	US Agency for International Development
USD	US dollar
USP	United States Pharmacopeial Convention

OVERVIEW OF SIAPS PROGRAM IN AMAZON MALARIA INITIATIVE

Background



Figure 1. Dark green, AMI countries; medium green, observer country French Guyana; light green, former AMI countries Venezuela and Bolivia

Since 2002, as a partner of the USAID-sponsored Amazon Malaria Initiative (AMI), MSH's programs in pharmaceutical management have supported the introduction of artemisinin-based combination therapies in South America to confront the resistance that *P. falciparum* has developed to previous therapies. Because of this and other contributing factors, malaria has significantly decreased in the Americas during past 10 years. In 2015, some countries have explicitly included elimination strategies in their operational plans. The countries included in AMI are shown in figure 1.

Paradoxically, the current epidemiological situation has imposed new challenges on pharmaceutical supply management, for example:¹

- The decrease in incidence has not been homogeneous. Higher incidence now occurs in remote and/or difficult-to-access locations and in populations not covered by conventional health services.
- Pharmaceutical suppliers have little or no interest in marketing the reduced volumes of medicines that are now required, which means that in some countries, solicitations for the

¹ <http://siapsprogram.org/publication/technical-assistance-in-managing-the-supply-of-antimalarials-in-low-incidence-regions/>

purchase of first-line medicines have no bidders, and others have no suppliers for treatment of severe cases.

- Procurement of antimalarial supplies, which is now frequently outside the control of national malaria control programs (NMCPs), relies on historical morbidity records. This results in the NMCPs having a difficult time ensuring that sufficient quantities are purchased to maintain adequate inventories in areas with little or no malaria. Similarly, the distribution of supplies fails to consider the risk of outbreaks or reintroduction of malaria, meaning that areas of low or no incidence no longer receive medicines.
- In areas of low incidence, personnel lose the skills required to diagnose and treat malaria, while institutions lose the capacities to monitor, prevent, and control malaria. This situation has contributed to delays in the response to outbreaks that occur in areas where cases had disappeared.

Since 2012, SIAPS has been implementing system strengthening approaches to address these challenges.

Program Objectives and Results Framework

The USAID-funded AMI seeks to prevent and control malaria in the Amazon Basin and Central America while bringing lessons learned and networking to other countries, both in the region and around the globe. Main lines of assistance are antimalarial efficacy monitoring, resistance surveillance, prevention of emergence of resistance to antimalarials, access to quality diagnosis and treatment, quality assurance and control of pharmaceuticals and other supplies for malaria, vector surveillance and integrated vector management, epidemiological surveillance, and networking and systems strengthening. The SIAPS systemic approach to providing this assistance is embedded in the USAID 2015–2019 vision for health system strengthening, aiming to simultaneously contribute to prevent child and maternal deaths and protect communities from infectious diseases. SIAPS provides technical assistance in pharmaceutical management with a focus on medicine availability, prescribing and dispensing practices, patient adherence to treatment regimens, and managing the supply chain, including quantifying needs and identifying and correcting weaknesses in the system for procuring malaria medicines and supplies.

List of Funding from USAID/AMI to SIAPS

Program Year	Obligated amount (USD; Source: PMI)
PY1	900,000
PY2	650,000
PY3	591,875
PY4	400,000
PY5	550,000
Total	3,091,875

Milestones

This systemic approach, based on the public health functions (governance, human resources, information, financing, and service delivery)^{2,3} was implemented at three levels—

- **Regional:** Through the Pan American Health Organization (PAHO) and the Amazon Network for the Surveillance of Antimalarial Drug Resistance (Red Amazónica de Vigilancia de la Resistencia a los Antimaláricos [RAVREDA])
- **National:** In Guatemala, Belize, Honduras, Nicaragua, Panama, Colombia, Ecuador, Peru, Bolivia,⁴ Brazil, Guyana, and Suriname
- **Subnational:** In approximately 200 subnational jurisdictions (counting only first-level subdivisions, whether department, state, province, or district)

Key milestones associated with the public health functions are described below and summarized in figure 2.

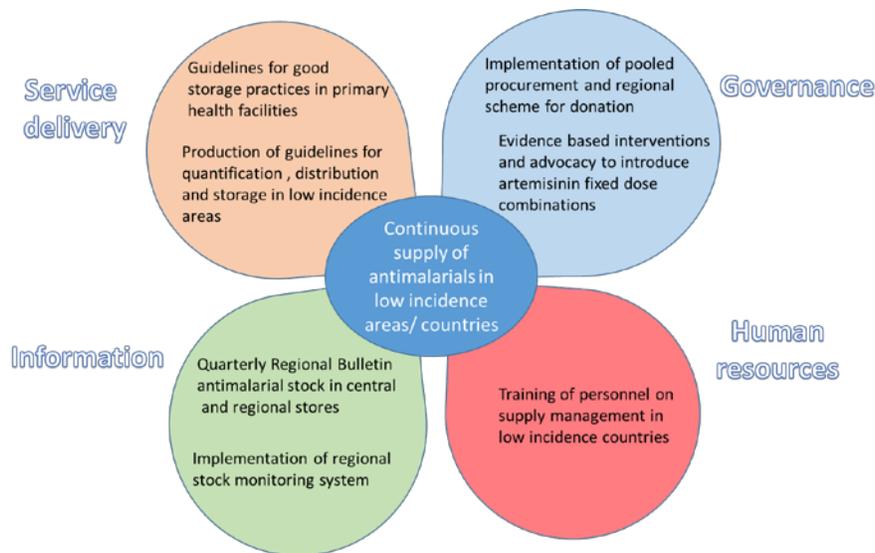


Figure 2. SIAPS intermediate results (IRs), contributing to AMI goals

Introduction of Artemisinin Fixed-Dose Combinations

Before 2012, Bolivia and Peru were still using artemisinin as monotherapy in combination with other antimalarials. In 2012, fixed-dose combinations (FDCs) were introduced in both countries

² WHO, Everybody's Business: Strengthening Health Systems to Improve Health Outcomes: WHO's Framework for Action (2007); WHO, The World Health Report 2000—Improving Performance (2000)

³ US Agency for International Development (2015). USAID's Vision for Health Systems Strengthening

⁴ Not supported by USAID since 2013

through pilot programs. To support the pilots, the following technical assistance strategies were used by SIAPS:

- Governance: Collection of evidence, preparation of policy briefs, and advocacy to change treatment policies
- Service delivery: Development of a plan to introduce FDCs in Peru

Supply of Antimalarials to Low- and No-Incidence Areas

Prior to 2012, the supply of antimalarials to low- and no-incidence areas (but still at high risk for reintroduction) was not considered. Currently, estimations and operative plans have been developed for the supply of antimalarials to these areas. To support this, the following technical assistance strategy was used by SIAPS:

- Service delivery: Production of national guidelines to estimate needs and distribution of antimalarials to low-incidence areas

Regional Stock Information System

Before 2012, national information on stock availability was not shared with countries in the region. Currently, NMCPs from 12 countries share this information, facilitating timely procurement and donations among countries. To support this information exchange, the following technical assistance strategies were used by SIAPS:

- Information: Development and implementation of regional antimalarial stock monitoring system and quarterly information bulletin
- Governance: Coordination of regional antimalarial stock monitoring system and quarterly bulletin; coordination transferred to PAHO in 2013

Regional Procurement Scheme for Antimalarials

Before 2012, procurement of antimalarials relied on national providers. Many countries, such as Honduras, Peru, and Ecuador, had local bids with few competitors. Currently, a pooled procurement mechanism has been implemented through the PAHO Strategic Fund; USAID's limited resources are used only to procure medicines for severe cases. To support this, the following technical assistance strategy was used by SIAPS:

- Governance: Regional workshops and coordination meetings with the PAHO Strategic Fund to implement a pooled procurement of antimalarials and a regional scheme for the donation of medicines for severe cases

Improvement in Storage Conditions

Prior to 2012, previous projects had documented poor conditions for the storage of low-rotation antimalarials in low-incidence areas. To address this, SIAPS developed *Tips for Lowering*

*Pharmacy Temperatures to Maintain Good Medicine Quality.*⁵ To support this, the following technical assistance strategy was used by SIAPS:

- Service delivery: Implementation of operational research, development of guidelines for good storage practices in primary health facilities, and implementation of a pilot test in Peru

Training of Primary Health Workers

Before 2012, local providers had limited information on diagnosis and treatment for low-incidence areas. SIAPS developed educational materials and trainings for these local providers.

- Human resources: Development of primary health-level guidelines for antimalarial management in low-incidence countries and training personnel in Peru, Colombia, Bolivia, and Guatemala

The timeline in figure 3 presents key milestones.

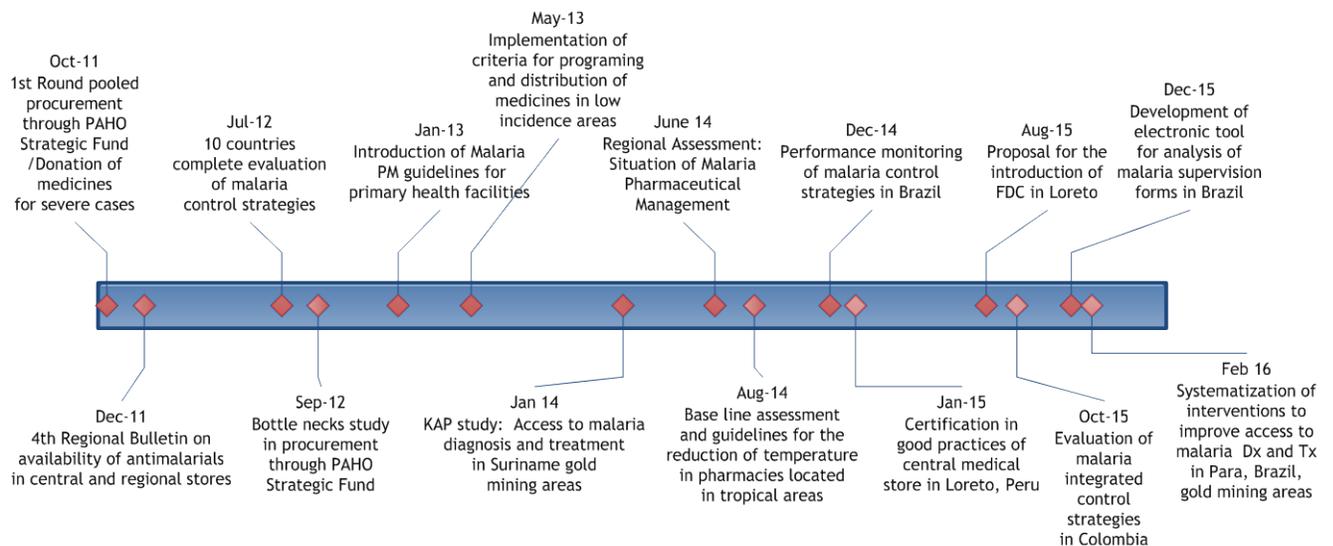


Figure 3. Key milestones in the improvement of malaria pharmaceutical management in AMI countries

Implementation Partners

Launched in 2001 with the support of USAID, AMI is a regional program implemented in countries of the Amazon Basin and Central America that are also members of RAVREDA. The consortium of partners includes the ministries of health of the participating countries and the following technical partners, in addition to the USAID-funded SIAPS Program, implemented by MSH.

⁵ <http://siapsprogram.org/publication/tips-for-lowering-pharmacy-temperatures-to-maintain-good-medicine-quality/>

Pan American Health Organization

- Participates in the initiative's planning process and coordinates this process under USAID direction
- Provides technical assistance in malaria surveillance and entomological surveillance and control
- Coordinates planning, monitoring, and evaluating for PAHO regional and in-country activities financed through PAHO
- Coordinates development and dissemination of standard policies, strategies, interventions, guidelines, and protocols
- Prepares an aggregated general report in coordination with other partners

US Centers for Disease Control and Prevention

- Participates in the initiative's planning process
- Provides technical assistance in entomology and vector control, malaria diagnosis, molecular epidemiology, and malaria treatment to support implementation of regional and national-level activities
- Emphasizes specific technical aspects, such as in vitro diagnostics and vector control tools

United States Pharmacopeial Convention/Promoting the Quality of Medicines

- Participates in the initiative's planning process
- Provides specialized technical assistance in quality assurance of antimalarials and insecticides with a focus on implementation of proper quality control processes throughout the supply chain and strengthening of Official Medicines Control Laboratory capabilities to analyze medicines and provide trustworthy and reliable results

Links Media

- Participates in the initiative's planning process
- Assists USAID and other AMI partners in the design and implementation of communication and advocacy strategies for malaria control
- Engages online communities via Facebook, LinkedIn, Twitter, Flickr, and the AMI website
- Facilitates information sharing among AMI partners and supports knowledge management

- Develops and disseminates press and educational materials through multiple international channels
- Conducts virtual communication trainings, compiles and develops AMI's annual achievement report, and provides limited editorial and graphic design support to partners for the development of scientific and technical documents and articles

List of Stakeholders

SIAPS has directly or indirectly collaborated with NMCPs in all countries supported by AMI as of September 2017. Direct technical assistance was provided as well to provincial malaria programs in decentralized systems: Choco, Meta, Cauca, and Nariño in Colombia; Loreto and Madre de Dios in Peru; and Acre, Amapá, Amazonas, Maranhao, Mato Grosso, Pará, Rondonia, Roraima, and Tocantins in Brazil. Through educational materials developed for primary health facilities, and supervision to health posts, SIAPS supported approximately 200 subnational jurisdictions (counting only first-level subdivisions, whether department, state, province, or district).

SIAPS ACHIEVEMENTS–RESULTS BY PROGRAM OBJECTIVE/IR AREA

Using SIAPS IRs, the following table shows the contribution to program indicators from the AMI portfolio.

	Baseline		End of PY indicator values						End of project target
	Value	Year	PY1	PY2	PY3	PY4	PY5	PY6	
IR 1: Pharmaceutical Sector Governance Strengthened									
# of pharmaceutical management guidelines, lists, and SOPs developed (or updated) and submitted for adoption	0	2011	--	2	9	9	9	9	2
# of countries with strengthened pharmaceutical management as a result of AMI support	0	2011	--	0	4	4	4	5	5
# of decentralized malaria programs implementing revised pharmaceutical management procedures	0	2011	--	0	3	3	3	3	3
# of countries with updated information on the performance of malaria control strategies	5	2011	--	0	10	10	10	10	10
IR 2: Capacity for pharmaceutical supply management and services increased and enhanced									
# of persons trained in pharmaceutical management (disaggregated by gender)	0	2011	--	255	554	565	683	683	480
% of AMI countries reporting malaria stock-levels quarterly	75%		--	92%	75%	67%	78%	--	90%
IR 3: Utilization of information for decision-making increased									
Date of last submission of report on a standard set of pharmaceutical indicators	July 2011	2011	--	Aug 2013	Aug 2014	Aug 2015	Aug. 2016	---	Aug 2015
% of AMI countries making pharmaceutical management decisions based on information provided by AMI partners	0	2011	--	92%	75%	67%	73%	73%	90%
# of technical documents distributed to decision makers	0	2011	--	0	11	21	37	37	30
IR 4: Utilization of information for decision-making increased									
# of Global Fund proposals/grants developed and submitted with technical assistance from SIAPS	0	2011	--	1	1	1	1	1	2
IR 5: Pharmaceutical services to achieve desired health outcomes improved									
% of health facilities implementing good dispensing standards for medicine dispensing	0	2011	--	100%	100%	100%	100%	100%	4
# of AMI countries with revised pharmaceutical management strategies for programming and distribution	0	2011	--	0	6	6	6	6	8
# of special groups/remote areas with alternative pharmaceutical management strategies designed and implemented	0	2012	--	0	1	1	1	1	2
% availability of malaria medicines in central stores	77%	2011	--	84%	85%	86%	85%	85%	100%

SIAPS ACHIEVEMENTS—STRENGTHENING THE PHARMACEUTICAL SYSTEM IN THE AMI

Key Achievements

Simultaneous interventions in different health system functions contributed to a continuous supply of antimalarials despite the challenges associated with low transmission. Data recorded quarterly by the regional stock monitoring system shows that, in 2015, the availability of antimalarials in central and regional warehouses was 86%,⁶ a significant improvement from the 79% reported in 2012⁷ (figure 4).

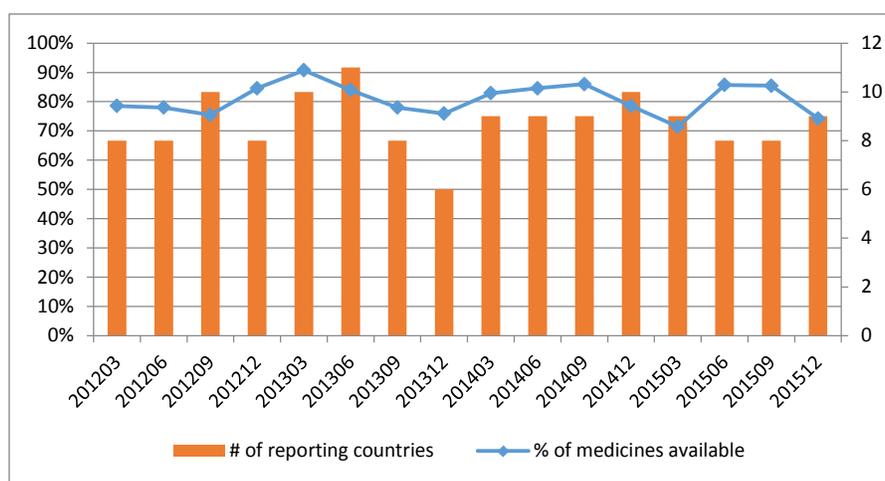


Figure 4. 2012-2015: Number of countries providing data for the regional stock monitoring system and availability of antimalarials in central warehouses

The organization of a regional pooled procurement scheme, led by the PAHO Strategic Fund, contributed immediately and directly to this achievement, as did donations of medicines among AMI countries. Based on information provided by the regional stock monitoring system, as of December 2014, AMI countries with overstocks donated 2.4 million antimalarial units at a cost of USD 95,000 to countries facing potential stock-outs.⁸

⁶ Pan American Health Organization/Systems for Improved Access to Pharmaceuticals and Services (2015). Regional bulletin for the availability of antimalarial medicines: Second Quarter 2015. Vol 2, N 2. 2015

⁷ Strengthening Pharmaceutical Systems (2012). Informe técnico: Análisis de la disponibilidad de medicamentos antimaláricos en países de la cuenca del Amazonas: Primer trimestre de 2012.

⁸ SIAPS. 2015. *Informe técnico: Evaluación de la situación de la gestión del suministro de medicamentos antimaláricos en los países miembros de la Iniciativa para el Control de la Malaria en la Cuenca del Amazonas*. Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por el Programa Systems for Improved Access to Pharmaceuticals and Services (SIAPS). Arlington, VA: Management Sciences for Health.

Sustainability and Country Ownership

The sustainability of these practices and their impact on the availability of antimalarials and diagnostic supplies is ensured through a combination of political, legal, institutional, technical, and financial factors.

Political and Legal

Some AMI countries have developed plans to eliminate malaria. These initiatives are supported by a regional action plan launched by PAHO in 2016. The execution of country plans will utilize the tools and methods developed by SIAPS and previous MSH-implemented, USAID-supported pharmaceutical management programs.

Institutional

Innovative pharmaceutical management practices, such as the distribution of antimalarials to facilities in low-incidence areas, have been incorporated into national norms and operational procedures and are routinely implemented by health workers without technical assistance. The collection and reporting of stock information was handed over to PAHO.

Technical

All pharmaceutical management practices developed with SIAPS' technical assistance are currently implemented by Ministry of Health staff, without the need for additional technical assistance. Technological resources (such as the electronic application for the regional information system) were locally developed and are maintained by PAHO and the malaria programs.

Financial

AMI/SIAPS has not financed any personnel responsible for recurrent malaria-program activities, nor introduced any technological innovations demanding maintenance expenses. Some practices, such as the donation of medicines among countries, have contributed to a continuous supply of antimalarials while preventing losses due to expiration, which has resulted in financial savings.

Lessons Learned

The transit from malaria control to elimination demands a regional approach to prevent outbreaks originating in neighboring countries and to organize a coordinated operative response. The systemic approach applied by SIAPS allows the simultaneous implementation of different interventions, depending on the weaknesses of a particular country or the region as a whole.

Besides, AMI is simultaneously supporting high-burden countries and countries that are moving toward an elimination phase. The pharmaceutical management of antimalarials in low-incidence areas requires a different approach. SIAPS has developed methodologies and tools that are successfully used in Latin America and that could be adopted in other countries moving toward elimination.

FUTURE OF PHARMACEUTICAL SYSTEMS STRENGTHENING IN THE AMI

Pharmaceutical management of antimalarials in AMI countries should continuously innovate as countries transit from high-incidence to pre-elimination phases. AMI should consider integration of a pharmaceutical management partner to provide technical assistance in the following areas:

- Institutionalization of forecasting methods to procure medicines, with special consideration of low- and no-incidence areas that are at high risk of reintroduction
- Full integration of all AMI countries into a regional pool procurement of antimalarials
- Implementation of alternative antimalarial distribution and dispensing strategies for underserved communities with high malaria incidence (gold miners, indigenous populations)