Technical Assistance in Managing the Supply of Antimalarials in Low-Incidence Regions

Different Management Sciences for Health (MSH) programs\(^1\) financed by the US Agency for International Development (USAID) through the Amazon Malaria Initiative (AMI) have given their support, since 2002, to managing the supply of antimalarials in countries sharing the Amazon basin (and lately, in Central American countries). Over the course of these years, it has become necessary to rethink strategies, given the fast changes in malaria’s epidemiological situation.

Background

Between 2000 and 2009, the number of confirmed cases of malaria in the Americas decreased by about 43 percent. Fifteen countries reported decreases of more than 50 percent, and three more reported significant reductions that did not reach these levels. During the same period, only three countries showed increases in the incidence of malaria, two of them—Haiti and the Dominican Republic—because of the earthquake that shook the island in 2010.\(^2\)

The reasons for these significant decreases in incidence are not at all clear. The strengthening of control strategies, including the introduction of artemisinin derivatives to treat \(P. falciparum\) in the countries sharing the Amazon basin, may have been a contributing factor, although a study carried out by AMI showed gaps that could be bridged with implementation of appropriate control strategies in different countries of the Region.\(^3,4\)

Timely treatment is the cornerstone of malaria control in regions with low incidence and in plans to move to preelimination and elimination phases. Paradoxically, just when fewer medicines are required, their supply management faces greater challenges, different from those overcome when the incidence was higher. The following examples illustrate the current situation—

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\(^1\) Rational Pharmaceutical Plus (RPM Plus), Strengthening Pharmaceutical Systems (SPS), and currently Systems for Improved Access to Pharmaceuticals and Services (SIAPS).


\(^3\) A complete description of the methodology, as well as results, is in the article *Rapid assessment of the performance of malaria control strategies implemented by countries in the Amazon sub region using adequacy criteria: case study* on the website [http://www.malariajournal.com/content/10/1/379](http://www.malariajournal.com/content/10/1/379).

\(^4\) “Region” is used here to refer to countries of Latin America and the Caribbean.

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The decrease in incidence has not been homogeneous in the Region or in the interior of these countries. The areas of higher incidence can now be found in locations of poor geographic accessibility or confined to populations whose specific living and working conditions do not provide access to institutional health services.

Pharmaceutical vendors have lost interest in marketing the reduced volumes that are now required. SPS and SIAPS have documented that this is the reason why national bids for the purchase of first-line medicines have not had any response in Peru and Honduras, for example. Medicines for the treatment of severe cases cannot rely on providers in national markets.

The distribution of antimalarials in areas of low incidence is based on historical morbidity records, so areas with low or no incidence cease to receive medicines, even when the risk of reintroduction is high.

In areas of low incidence, personnel lose the skills required to make a diagnosis and provide treatment, while institutions lose capacity to respond to outbreaks. This situation has contributed to an increase in incidence in areas where cases had disappeared.

The integration of antimalarial supplies into national pharmaceutical supply systems in various countries is a consequence of reforms in the health sector, as well as a response to the inefficiency of maintaining vertical distribution systems in low-incidence disease control programs.

Because of the above-mentioned changes in the epidemiological situation of malaria and in the support from technical and financial cooperation agencies, in the last few years, control strategies—as well as those for pharmaceutical supply—seem to have had three stages since their beginnings in 2000—

1. **National**: Although following international recommendations, each country in the Region promoted its own control strategies, with little or no coordination with neighboring countries.

2. **National/Regional**: In addition to strictly national strategies, regional strategies are strengthened by the Amazon Network for the Surveillance of Antimalarial Drug Resistance (Red Amazónica de Vigilancia de la Resistencia a los Antimalarials, or RAVREDA) and the support of USAID to AMI. The introduction in the entire Region of artemisinin derivatives based on evidence gathered by a regional surveillance network is an example of this approach’s success.

3. **National/Regional/Local**: The specifics required for malaria control on a local level became more evident with the decrease in incidence. Likewise, national and regional strategies require control strategies meeting the specifications of departments/states, municipalities, or groups living and working in special circumstances.
AMI has led and enhanced this approach of progressive integration of strategies aiming at different geographic ranges. In the specific area of antimalarial supply management, this approach is evidenced in the interventions described below and is summarized in Table 1.

Table 1. Strategies of Differing Geographic Ranges Supported by AMI

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National

Incorporating the Provision of Antimalarials into National Pharmaceutical Management Systems

Whether as the result of sector reforms or because of the need to introduce efficiency into the supply system, several countries in the Region are incorporating the supply of antimalarials into national supply management systems. AMI intends to join the integration processes in at least two countries in the Region.

Supporting National Studies of the Performance of Control Strategies ("Adequacy")

SPS participated in malaria control performance studies in several countries in the Region, at the national strategic level\(^5\) as well as operating levels, by supporting national supervision systems. In future years, AMI will develop tools to evaluate the bridging of gaps in the performance of antimalarial supply, comparing baseline information with periodic surveillance evaluations.

\(^5\) Between 2010 and 2011, “adequacy” studies were implemented in eight countries of the Region. The results of the first studies were presented in an article published in the *Malaria Journal* (http://www.malariajournal.com/content/10/1/379).
**Designing National Strategies to Control Outbreaks and Avoid Reintroduction**

SPS and SIAPS have supported several countries in determining minimum medicine stocks to be maintained in locations that present few, or no, cases. The impact of these reviewed programming and distribution criteria on timely treatment and supply will be evaluated systematically. In addition, SIAPS is studying personnel capacity in low-incidence areas to diagnose malaria and provide effective treatment. These investigations will include case studies of institutional responses to recent outbreaks in the Region. It is hoped that these studies offer the necessary information to develop strategies that avoid reintroduction of malaria in countries or locations that have reached preelimination phases.

**Regional**

**Regional Inventory Monitoring**

Since 2010, SPS, followed by SIAPS, has supported the monitoring of antimalarial stocks in central and regional warehouses in the Region’s countries. This system has favored the exchange and donation of medicines and has helped, in Ecuador, to organize an antimalarial stock consumption and inventory information system.

**Standardization of Treatment Regimens**

AMI has encouraged in several regional forums discussing the convenience—for regional coordination of supplies—of standardized treatment regimens. The biggest difference of opinion between decision makers arose about two alternative regimens for *P. falciparum*: artesunate + mefloquine as opposed to artemether + lumefantrine. SIAPS has developed documents to simplify the decision-making process.

**Joint Purchase of Medicines**

In the course of regional meetings organized by SPS, representatives from regional malaria programs requested from the Strategic Fund of the Pan American Health Organization (PAHO) the development of a joint purchasing system for the acquisition of antimalarials. The mechanism has been operating since 2011, although country adherence with established procedures is not uniform. In 2012, SIAPS finalized a study on bottlenecks that countries face in acquisitions through the PAHO Strategic Fund. It is hoped that this regional study, as well as other specifics that may be required by different countries, will allow a more complete adherence to this regional purchasing mechanism.

**Management of Donations for Treatment of Severe Cases**

Given the reduced volume in demand, the acquisition of medicines for severe cases is especially challenging. Upon request from AMI member countries, these medicines are purchased by the PAHO Strategic Fund with USAID resources and delivered as a donation to those countries. This initiative has solved the shortage of these products.
Local

**Decentralized Support in High- and Low-Incidence Areas**

The good practices in pharmaceutical supply management that AMI has supported for several years demand specific information, adjustments, and technical assessment in their implementation in decentralized areas that present extreme epidemiological conditions. SIAPS has studied the supply situation in two Peruvian departments (Loreto and Madre de Dios) and in one Colombian department (Chocho). Building on these baseline diagnostics, the interventions needed to support supply in high-incidence areas were agreed to with local counterparts. SIAPS is also planning to implement demonstration interventions that aim at preventing the reintroduction of the disease by adjusting the supply of medicines in areas with very low, or no, incidence.

In Brazil, SIAPS will support the reproduction at state level of the *adequacy* study completed on a national level. The results will enable the states to *close* gaps with the implementation of appropriate control strategies.

**Differentiated Strategies for Groups Living and Working in Special Circumstances**

The decrease in average malaria incidence in the Region’s countries has left areas with a high concentration of cases uncovered because of specific factors in the population’s working and living conditions. The most illustrative areas are those of artisanal mining on the border of Brazil and Guyana, and Suriname and French Guiana. Evidence gathered by AMI partners suggests that in these zones, where unauthorized medicine of dubious origin circulates, generation of strains resistant to artemisinin derivatives may occur. An alternative approach for diagnosis and treatment in these communities requires studies on the current situation of access to and use of medicines. AMI will carry out this study during the first half of 2013.