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Evaluation of the Performance of Malaria Control Strategies in Latin America, Using Adequacy Criteria

The reduction in the incidence of malaria in most of the countries of Latin America can be attributed to the rigorous implementation of the most important strategies for epidemic control: (a) vector control through the use of indoor residual spraying of insecticide or insecticide-treated bednets, (b) timely diagnosis, and (c) the use of effective antimalarials in accordance with the resistance profiles observed in each country. In the absence of controlled studies, however, this inference is possible only if control strategies are implemented effectively.

Within the framework of the Amazon Malaria Initiative (AMI), a program funded by the US Agency for International Development (USAID), two projects being implemented by Management Sciences for Health and also receiving funding from USAID,¹ conducted coordinated evaluations of the performance of malaria control strategies between 2010 and 2012. Each was assisted methodologically by the system used by Habicht et al. (1999),² which recommends that before establishing a causal relationship between public health interventions and impact, it should be determined whether the interventions were *adequately* implemented.

Adequate implementation of malaria control strategies requires compliance, at a minimum, with criteria involving the following components:

- The evidence on which the intervention is based, for example, studies of vector habits and sensitivity to insecticides and antimalarials
- Adequate coverage of the target population
- The quality of implementation of the intervention

Technical documents prepared by the World Health Organization and the Pan-American Health Organization made it possible to establish, for each of the three preceding components, the minimum criteria to be met to achieve adequate implementation of malaria control strategies. Depending on the strategies evaluated and the country involved (for example, some countries do not use indoor residual spraying), the number of criteria used varied between 7 and 14 per strategy. The range of scores for assessing performance also varied both among strategies and among countries, but as a rule the evaluation team considered a strategy to be *adequately* implemented if at least 90 percent of the criteria were met, whereas a strategy's implementation was deemed *poor* if fewer than 40 percent of the criteria were met. Scores falling between these two values were indicative of *average* implementation. Details of the methodology used and the results obtained for the first five countries evaluated can be consulted on the SIAPS website³ and in the article published in the *Malaria Journal*.⁴

¹ These programs are Strengthening Pharmaceutical Systems (SPS) and Systems for Improved Access to Pharmaceuticals and Services (SIAPS).

² Habicht J, Victora C, Vaughan J. Evaluation designs for adequacy, plausibility and probability of public health programme performance and impact. *International Journal of Epidemiology* 1999;28:10–18.

³ Flores, W. 2011. *Impacto del tratamiento combinado con artemisinina para la malaria en diferentes países y las implicaciones para los países de la cuenca del Amazonas: Reporte final*. Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por el Programa Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health. <http://siapsprogram.org/wp-content/uploads/2013/07/11-078-TCA-FINAL-SP-revised-June-2011.pdf>.

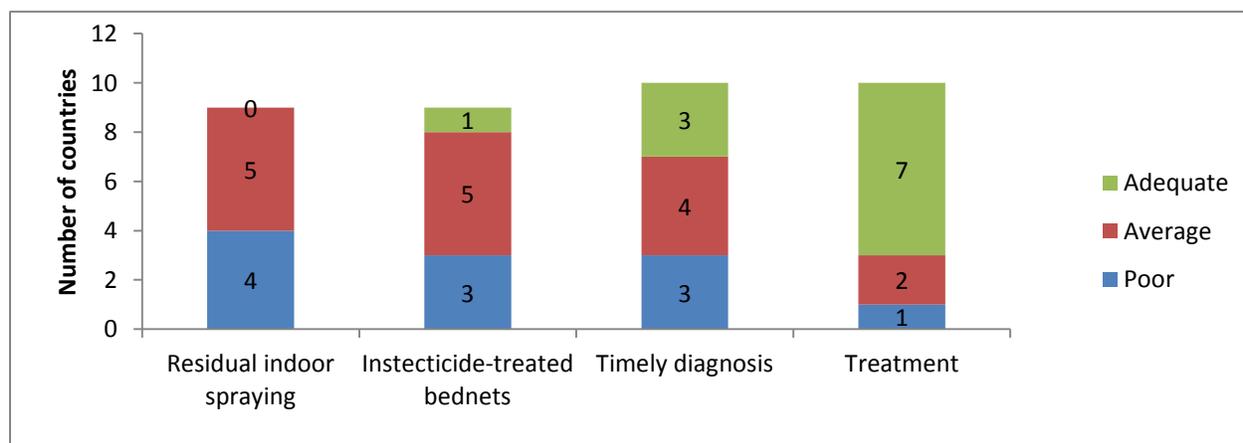
⁴ Flores W, Chang, J, Barillas, E. Rapid assessment of the performance of malaria control strategies implemented by countries in the Amazon subregion using adequacy criteria: case study. *Malaria Journal* 2011;10:379. <http://www.malariajournal.com/content/10/1/379>.

The results for 10 countries of Latin America revealed the following:

- In most of the countries evaluated, vector control strategies (indoor residual spraying and insecticide-treated bednets) are poorly implemented. Frequently no prior studies of vector habits or resistance to insecticides exist to support their use; the target population is not always well defined; and a lack of systems to monitor their use is commonplace.
- The scores received by 7 of the 10 countries evaluated pointed to average or poor implementation with regard to timely diagnosis. Scores were low, particularly in those countries that have incorporated the use of rapid assessment tests without having satisfied minimum criteria for their adequate implementation (criteria for use, assurance of uninterrupted supply).
- The strategy exhibiting the highest quality of implementation was the use of effective antimalarial medications: 7 of 10 countries showed *adequate* performance. In the countries of South America, the AMI-supported systematic introduction of artemisinin derivatives was heavily favored. In Central American countries, an assessment was made with regard to the ongoing availability of chloroquine and primaquine, as well as the prescription and dispensing of these two drugs in accordance with the protocols in effect in each country.

The following figure summarizes the strategy implementation scores obtained by the entire set of 10 countries subject to evaluation.

Results of the evaluation of the performance of malaria control strategies using adequacy criteria, selected Latin America countries, 2010–2012



The technical reports submitted to the authorities of each country detail the deficiencies identified and offer alternatives for addressing them.

The results of the country-level study led Brazil’s malaria control program to decide to carry out similar studies at the state level. In August 2013, technicians from nine Brazilian states participated in a SIAPS-sponsored workshop at which performance deficiencies for each control strategy were identified. Participants prepared operating plans designed to close gaps in performance. A national-level workshop has been scheduled for November 2014 to assess the degree of progress achieved in closing these gaps, using a methodology developed by SIAPS.⁵

⁵ Flores, W. 2013. *Metodología para monitoreo del cierre de brechas en el desempeño de la estrategias de control de la malaria utilizando criterios de adecuación*. 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.