USAID
FROM THE AMERICAN PEOPLE

FACT SHEET 2015-01

# AMAZON MALARIA INITIATIVE

## Antimalarial Drug Resistance

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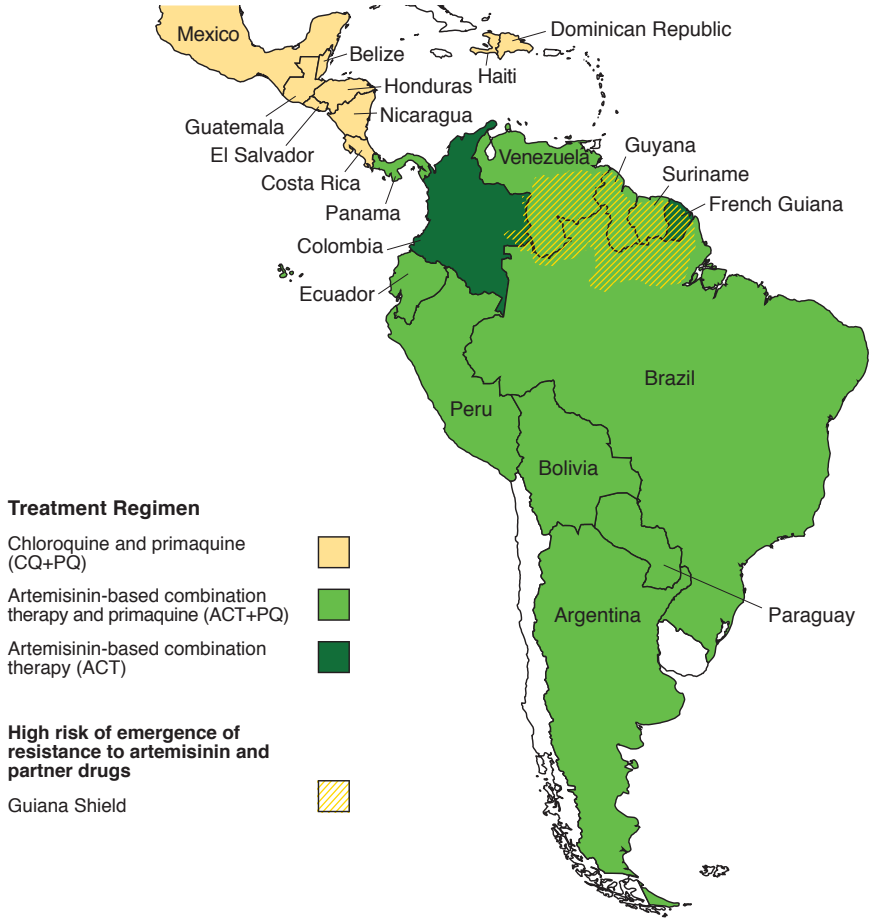
### Background

Countries in the region of the Americas rely on prompt and effective treatment as the primary means for reducing malaria morbidity and mortality. In the Amazon basin, the emergence and spread of *Plasmodium falciparum* parasites resistant to first-line antimalarial medicines such as chloroquine prompted national malaria programs to turn to artemisinin-based combination therapy (ACT, composed of an artemisinin derivative and a partner drug). The reduction of efficacy of antimalarial drugs currently in use poses a serious threat to gains made in malaria control in the Americas, and may result in higher costs to health systems.

**FIGURE 1.** Current first line treatment for uncomplicated *P. falciparum* malaria, by country.




### Current Status of Antimalarial Resistance in the Americas

Eight Amazon basin countries use ACTs, while Central American countries use chloroquine as the first-line treatment for *P. falciparum* malaria. In 2012, Guyana and Suriname reported a suspected decline in artemisinin sensitivity for the first time in the region, based on *in vivo* study results indicating that >10% of patients still had parasites in the blood on day 3 after initiating treatment with the ACT artemether-lumefantrine. In 2014, both countries completed studies assessing how artesunate cleared parasites from patients' blood, finding no evidence of artemisinin resistance as currently defined. Testing of *P. falciparum* samples from both countries for genetic mutations in the K13-propeller gene associated with resistance to artemisinin yielded negative results.

Currently, ACTs continue to be efficacious for treating *P. falciparum* malaria in the Amazon sub-region. Nevertheless, artemisinin efficacy has declined slightly in Suriname since 2004, and the Amazon sub-region faces a significant threat of emergence of resistance to artemisinin and its partner drugs because of their inappropriate use, particularly among hard-to-reach and mobile populations associated with gold mining in Guiana Shield countries.

*(Continued)*

Pan American Health Organization
World Health Organization Regional Office for the Americas
CDC Safer·Healthier·People
SIAPS Systems for Improved Access to Pharmaceuticals and Services
USAID From the American People USP Promoting the Quality of Medicines

## How does the Amazon Malaria Initiative (AMI) Contribute to the Early Detection and Containment of Antimalarial Drug Resistance in the Americas?

- Through AMI, the United States Agency for International Development (USAID) and Pan American Health Organization (PAHO)/World Health Organization (WHO) have helped to establish and strengthen the Amazon Network for Antimalarial Drug Resistance Surveillance or RAVREDA (acronym in Spanish), a regional network of national malaria control programs that conduct antimalarial drug efficacy surveillance and other activities to address malaria.

- Initially, AMI and RAVREDA supported countries in the Amazon basin and Central America sub-regions to adopt standardized protocols to assess first-line treatments and to evaluate alternative treatments for malaria according to efficacy study results. Now, countries receive technical assistance to conduct routine monitoring of the therapeutic efficacy of ACTs. This includes assessment of the proportion of patients who have parasites in the blood on day 3 after initiating treatment (the indicator of choice for routine monitoring to identify suspected artemisinin resistance in *P. falciparum*), along with the proportion of treatment failures after 28 or 42 days depending on the ACT.

- Technical assistance is provided in some countries to monitor resistance to antimalarials using *in vitro* tests or molecular markers when available.

- AMI offers technical guidance and training in the areas of pharmaceutical supply management and drug quality, helping to ensure access to timely diagnosis and treatment with good quality drugs.

- AMI provides countries with access to reliable information on the geographic distribution of resistant strains of malaria, reduced therapeutic efficacy of antimalarial drugs, and state-of-the-art guidance for malaria control according to global guidelines and strategies.

### Amazon Malaria Initiative's Main Lines of Work

- Antimalarial efficacy monitoring, resistance surveillance, and 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
- Networking and systems strengthening

### Resources


- Amazon Malaria Initiative (AMI)
  http://www.usaidami.org/

- Amazon Network for Antimalarial Drug Resistance Surveillance (RAVREDA)
  http://www.paho.org/hq/index.php?option=com_content&view=category&layout=blog&id=1988&Itemid=2150&lang=en

- Global Plan for Artemisinin Resistance Containment (GPARC), WHO January 2011
  http://www.who.int/malaria/publications/atoz/9789241500838/en/

- Malaria Policy Advisory Committee to the WHO: conclusions and recommendations of March 2013 meeting, *Malaria Journal* 2013, 12:213
  http://www.malariajournal.com/content/12/1/213

- Were medicine quality and pharmaceutical management contributing factors in diminishing artemisinin efficacy in Guyana and Suriname? *Malaria Journal* 2014, 13:77
  http://www.malariajournal.com/content/13/1/77

- Status Report on artemisinin resistance – September 2014, WHO
  http://www.who.int/malaria/publications/atoz/status-rep-artemisinin-resistance-sep2014.pdf?ua=1