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# FACT SHEET

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## DRUG-RESISTANT MALARIA ON THE THAI-CAMBODIAN BORDER

Health experts are concerned that drug-resistant malaria could spread from the Thai-Cambodian border to other areas of the Greater Mekong Subregion (GMS) and possibly to other continents.

Malaria parasites in western Cambodia and southeastern Thailand are increasingly resistant to artemisinin, the key component in artemisinin-based combination therapies (ACTs). ACTs, the most-effective treatment for multi-drug resistant malaria, are now taking two to three times longer to kill malaria parasites along the Thai-Cambodian border than elsewhere.

In 2000, the ACT used on the Cambodian-Thai border had an efficacy of almost 100%. By 2004 its efficacy dropped to 80%, meaning that among 100 malaria patients treated with the ACT, 20 of them had the malaria parasites reappearing in their blood within 4-6 weeks after being initially cleared.

All previous resistance to anti-malarial drugs originated on the Cambodian-Thai border – chloroquine in the late 1950s, Fansidar in the late 1960s, and mefloquine in the late 1980s. This resistance spread through Asia to Africa, which harbors the majority of the world's malaria cases.

Infectious disease specialists believe the Thai-Cambodian border is the breeding ground for the most drug-resistant malaria parasites in the world. These parasites possibly have a genetic structure that helps them develop resistance to anti-malarial drugs.

There are indications – yet to be confirmed – that artemisinin resistance may be spreading beyond the Thai-Cambodian border to other areas in the GMS.

Recognizing the global threat of ACT resistance, the U.S. Agency for International Development (USAID) is strengthening the capacity of GMS government health agencies. Particular attention is being paid to drug resistance and drug-quality surveillance. In certain focal-point areas, attempts are being made to eliminate malaria and contain ACT-resistant parasites.

All Mekong countries use ACTs against the deadly *Plasmodium falciparum* malaria, although different regimens are employed. Resistance has developed against the artesunate-mefloquine ACT that has been the first-line drug against malaria on the Thai-Cambodian border. At present, there is no ideal alternative drug. Cambodia and Thailand are replacing the artesunate-mefloquine ACT with “interim” regimens while awaiting new drugs that are under development or being tested.

While the number of malaria cases in Thailand, Cambodia and the rest of the GMS is low in comparison with Africa, the parasites in this region are among the world's most dangerous due to their resistance to commonly used malaria medications.

The combined number of malaria cases in five of the six GMS countries (Cambodia, Laos, Thailand, Vietnam and Yunnan Province in China) numbers nearly 150,000 each year. Among these, almost 100,000 cases are the deadly *P. falciparum* form of malaria. Worldwide, there are about 250 million cases of malaria and about 1 million deaths each year. The majority are in sub-Saharan Africa.

Scientists believe several factors may promote drug resistance and its spread. These include the use of anti-malarial drugs for fever without confirmation that patients are suffering from malaria, too low dosages of anti-malarial drugs, mass treatment of populations for malaria, as well as the use of substandard and counterfeit drugs. The use of artemisinin alone, rather than in combination with appropriate companion drugs, is also believed to accelerate the development of resistance.

USAID is working with the World Health Organization, national malaria control programs in the GMS, and with several partner organizations to strengthen surveillance for anti-malarial drug resistance, improve laboratory diagnosis, and ensure that patients are treated with high-quality anti-malarial drugs. Clinical workers are being taught to use laboratory tests when prescribing treatments and to support efforts to eliminate counterfeit anti-malarial drugs.

In the GMS, the goal of reducing malaria deaths by 50 percent was achieved five years ahead of the Roll Back Malaria Partnership's\* 2010 target date due to the efforts of national malaria programs and their partners.

But while there was a 36 percent decrease in malaria cases and a 55 percent reduction in deaths attributed to malaria between 2001 and 2005, those achievements could be wiped out if ACT-resistant malaria increases in the region. This is a possibility because counterfeits and substandard drugs are still widespread, migrants and ethnic minorities in remote areas continue to have difficulty accessing health services, and the health system infrastructure in many regions remains weak.

Led by USAID, with the U.S. Centers for Disease Control and Prevention and other partners, significant efforts are in place to fight malaria in Asia, Africa, and elsewhere around the world. For more information about USAID's programs to fight malaria, visit [www.usaid.gov](http://www.usaid.gov). For more information about the President's Malaria Initiative, visit [www.pmi.gov](http://www.pmi.gov).

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\* The RBM Partnership was launched in 1998 by WHO, UNICEF, UNDP and the World Bank, in an effort to provide a coordinated global response to the disease.