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Editor's Note: Supporting materials such as photos and the abstract are available on the password-protected online press room: https://astmhpressroom.wordpress.com/annual-meeting-2025/single-dose-malaria-treatment/

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Clinical Trial in Africa Finds Single-Dose Malaria Treatment Combining Four Existing Drugs as Effective as More Onerous Multi-Day, Multi-Dose Regimen

Research advance from Gabon presented at the American Society of Tropical Medicine and Hygiene Annual Meeting addresses threat of malaria parasite drug resistance

TORONTO (November 12, 2025) —Hundreds of malaria patients participating in a clinical trial in Gabon in West Africa were cured via a single dose of a treatment that utilizes four widely available malaria drugs, according to a new study presented today at the Annual Meeting of the American Society of Tropical Medicine and Hygiene (ASTMH).

The advance addresses a pair of problems that have contributed to a stalled fight against a disease that each year kills about 600,000 people: the alarming rise of drug-resistant malaria and the fact that a third or more of malaria patients fail to complete the standard three-day course of treatment, which can both encourage drug resistance and allow curable cases to intensify.

"We found that our single-dose treatment was just as effective as the standard course that typically requires taking six doses spaced out over three days, which many patients never complete," said Ghyslain Mombo-Ngoma, MD, PhD, lead author of the study and head of clinical operations at the Medical Research Center of Lambaréné, Gabon (known by its French acronym CERMEL).

He noted the single-dose treatment combining sulfadoxine, pyrimethamine, artesunate and pyronaridine (SPAP) may be more effective against drug-resistant parasites than standard therapies because the novel combination of four medicines—versus two drugs typically used in conventional treatments—targets four different vulnerabilities in the malaria parasite. Mombo-Ngoma said forcing a pathogen to fight a multi-front battle has been used to counter drug resistant tuberculosis and is of growing interest to malaria experts. Meanwhile, he said a single

-dose option for treating malaria addresses the problem of resistance emerging in patients that don't complete their full course of medicines—while also curing cases that, if insufficiently medicated, can allow malaria to persist and potentially cause life-threatening complications.

There is an urgent need for new ways to treat malaria patients because in sub-Saharan Africa, which accounts for 95% of the world's malaria infections and deaths, the fight against the disease has hit a plateau. After falling dramatically from 2000 to 2015, malaria infections and deaths, which mainly occur in children under 5 years old, have increased. The most recent figures available from the World Health Organization show that in 2023, there were 263 million cases and 597,000 deaths, compared with 2016 levels of 216 million cases and 445,000 deaths.

Along with funding threats, a key impediment to rejuvenating the fight against malaria is that parasites are developing at least partial resistance to treatments that combine artemisinin-based malaria drugs (once hailed as a major breakthrough against malaria) with one other medicine.

"Another challenge is that artemisinin combination therapies (ACTs) must be taken for three days to clear parasites from infected patients, and a third or more of malaria patients don't complete the full course," Mombo-Ngoma said. He said this failure can allow a large number of parasites to linger in the body, posing the risk that they could continue to multiply and cause severe disease, while also giving them time to develop mutations that can overcome ACTs.

One Dose to Fight Two Malaria Foes: Treatment Adherence and Drug Resistance

Mombo-Ngoma and his colleagues, who include Peter Kremsner, MD, PhD, director of the Institute of Tropical Medicine at Germany's University of Tübingen, recently published an analysis in the *Malaria Journal* that made the case for fighting the twin problems of treatment adherence and drug resistance by attempting to cure patients with a single dose comprised of several different malaria medications, all of them easily accessible in sub-Saharan Africa. They also have been working to test the approach in patients. From May 2024 to October 2025, they led a team that conducted a trial in Gabon involving treating more than 1,000 patients, half of them under 10 years old, who were fighting what is known as "uncomplicated malaria." That means they were sick, but they were not yet suffering severe life-threatening symptoms.

A little over half of the patients (539) were treated with a regimen that involved administering a single dose consisting of two different malaria "combination" medicines, which together involve four different drugs. One is known as SP, because it utilizes the drugs sulfadoxine and pyrimethamine, and the other is called AP, because it employs artesunate (which is a type of artemisinin) alongside pyronaridine. The rest of the patients (442) received a widely used ACT that combines the artemisinin drug artemether with lumefantrine, aka AL, which requires taking six doses over three days.

Blood tests conducted 28 days after the treatments showed that 93% of patients who received the single-dose cure were free of parasites compared to 90% who got the standard three-day course—meaning they were essentially equally effective. Mombo-Ngoma said there were no reports of study drug related serious adverse events in any of the patients.

“Another key advantage is that our single-dose cure was accomplished with drugs that are currently available to malaria treatment programs across Africa—and relatively affordable as well,” he said. “One of the medications, the sulfadoxine-pyrimethamine (SP) combination, is a generic drug already manufactured in several African countries, while artesunate-pyronaridine (AP) is not yet available as a generic but will be by early 2026.”

Mombo-Ngoma said there are already discussions underway with a drug manufacturer to produce SP and AP as a single capsule or sachet (a packet of pills). He also said malaria researchers in Mali, Ghana, Kenya and Mozambique have expressed interest in testing the single-dose approach.

The evidence supporting a single-dose cure that could at least reduce the threat of drug resistance is arriving at a time of encouraging progress in developing new compounds capable of defeating drug-resistant parasites. Mombo-Ngoma noted that while there is hope on the horizon, even in a best-case scenario, it will still take several years for the most advanced of these compounds to become widely available in Africa.

“I’m a malaria researcher, but I’m also a doctor treating a lot of malaria patients, and I need new options now,” he said. “What I hope is that, if we continue to have success with this single-dose cure, it can serve as a bridge to the new treatments now under development—something we can deploy very soon while we await the arrival of other options.”

“It’s exciting to see our members pursuing innovative ways of fighting drug-resistant malaria while also seeking solutions to treatment-adherence challenges, which is a pervasive problem in the management of many diseases,” said ASTMH President David Fidock, PhD, who heads a group of experts on antimalarial drug resistance that advises the WHO Malaria and Neglected Tropical Diseases Program. “This study is also a reminder that, at a time when the entire field of global health is facing enormous headwinds, ASTMH members are keeping their focus on research that can support better health for millions of people in low- and middle-income countries.”

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About the American Society of Tropical Medicine and Hygiene

The American Society of Tropical Medicine and Hygiene, founded in 1903, is the largest international scientific organization of experts dedicated to reducing the worldwide burden of tropical infectious diseases and improving global health. It accomplishes this through generating and sharing scientific evidence, informing health policies and practices, fostering career development, recognizing excellence, and advocating for investment in tropical medicine/global health research. For more information, visit astmh.org.