Malaria vaccine loses effectiveness over several years: study

June 30 2016

Credit: CDC

An experimental vaccine against malaria known as Mosquirix—or RTS,S—weakens over time and is only about four percent effective over a seven-year span, researchers said Wednesday.

The findings, published in the *New England Journal of Medicine*, are based on a phase II clinical trial involving more than 400 young children

in Kenya.

There is currently no vaccine against malaria on the world market and Mosquirix—developed by the British pharmaceutical giant GlaxoSmithKline—is the experimental vaccine in the most advanced stage of development.

It has also been tested in a vast clinical trial that spanned seven African nations, and last year the European Medicines Agency gave it a "positive scientific opinion" regarding its use outside the European Union.

But the current study, involving 447 children from five to 17 months of age, suggested otherwise.

Some of the infants were given three doses of the malaria vaccine, while others received a vaccine against rabies for comparison.

In the first year, the protection against malaria among Mosquirix-vaccinated children was 35.9 percent.

But after four years this protection fell to 2.5 percent.

Researchers said that on average, over the course of seven years, the vaccine would be considered just 4.4 percent effective against malaria.

This rate "was substantially lower than that seen over short-term follow up," said the study.

Furthermore, among children who were more frequently exposed to mosquito-borne malaria, cases of infection with the parasite P. falciparum in the fifth year were higher than in the control group.

Researchers said this phenomenon may be occurring because the vaccine

protects against the earliest form of malaria's life cycle, known as sporozoites, and reduces exposure to a later form, known as the blood-stage parasite, which causes the clinical symptoms of malaria such as fever, nausea, vomiting and diarrhea.

"The reduced exposure to blood-stage parasites among persons who have received the RTS,S/AS01 vaccine may lead to a slower acquisition of immunity to blood-stage parasites, leading to an increase in episodes of clinical malaria in later life," said the study.

The results of a larger, phase III clinical trial with the same vaccine, published last year, showed that three doses could reduce the risk of malaria by 28 percent over a period of four years.

The rate of protection rose to 36 percent when children received a fourth dose of the vaccine, suggesting that this additional dose was significant.

Malaria killed more than 400,000 people worldwide in 2015, with most of the deaths occurring in sub-Saharan Africa and most among children under age five.

The research was funded by the PATH Malaria Vaccine Initiative and the Bill and Melinda Gates Foundation.