

Cellphone-based microscope leads to possible strategy for treating river blindness

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River blindness, or onchocerciasis, is a disease caused by a parasitic worm found primarily in Africa. The worm (*Onchocerca volvulus*) is transmitted to humans as immature larvae through bites of infected black flies. Symptoms of infection include intense itching and skin nodules. Left untreated, infections in the eye can cause vision impairment that leads to blindness. Mass distribution of ivermectin is currently used to treat onchocerciasis. However, this treatment can be fatal when a person has high blood levels of another filarial worm, *Loa loa*.

In a paper published in the *New England Journal of Medicine*, scientists from the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, and other organizations describe how a cell phone-based videomicroscope can provide fast and effective testing for *L. loa* parasites in the [blood](#), allowing these individuals to be protected from the adverse effects of [ivermectin](#).

In the new study, 16,259 volunteers in 92 villages in Cameroon where both *L. loa* and *O. volvulus* are commonly found provided finger-prick blood samples. These samples were then tested for *L. loa* using the LoaScope, a small microscope that incorporates a cell phone. Developed by a team led by researchers from NIAID and the University of California, Berkeley, the LoaScope returns test results in less than three minutes. Volunteers who were not infected or who had low-level *L. loa* infections were given standard ivermectin treatment and observed closely for six days afterwards. Volunteers with high numbers of *L. loa*

parasites in their blood did not receive ivermectin.

Using this strategy, 15,522 study volunteers were successfully treated with ivermectin without serious complications. Nearly 1,000 participants experienced mild [adverse effects](#) following ivermectin treatment. According to the study authors, the LoaScope could be a valuable approach in the fight against [river blindness](#) by effectively targeting populations for ivermectin treatment, and protecting dually-infected patients from complications of inadvertent ivermectin administration.

More information: Joseph Kamgno et al. A Test-and-Not-Treat Strategy for Onchocerciasis in Loa loa–Endemic Areas, *New England Journal of Medicine* (2017). [DOI: 10.1056/NEJMoa1705026](https://doi.org/10.1056/NEJMoa1705026)

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