

Tulane researcher examines the cost-effectiveness of mosquito-control programs

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According to the World Health Organization (WHO), malaria deaths have fallen over the last decade, but half the global population is still at risk. A Tulane University professor and researcher recently co-authored a study that may lead to better control of parasite-carrying mosquitoes.

Epidemiologist and health economist [Joshua Yukich](#), an assistant professor in the School of Public Health and Tropical Medicine, led part of [a study on the cost of changing insecticides in Sudan](#) to address insecticide resistance in mosquitoes. The study was published in *Proceedings of the National Academy of Sciences*.

“These problems” — insecticide resistance — “can be dramatically impactful on the efficacy of [mosquito-control] interventions,” he said. “And we have very little evidence from well-designed studies that help quantify and show concretely that that’s the case.”

When the study began in 2012, some areas of Sudan were thought to have pyrethroid-susceptible *Anopheles arabiensis* mosquitoes. But the study region’s insecticide-resistance levels turned out to be much higher, allowing researchers to build a more realistic picture of the cost-effectiveness of using alternative insecticides instead of pyrethroids.

Yukich worked with government and WHO officials to collect field data. He determined the cost of changing insecticides in Sudan would increase indoor residual spraying costs by about 65 cents per person annually. While health ministries might find that cost prohibitive, international guidelines show it’s still

acceptable.

“It’s a significant increase,” Yukich said, “but relative to how much effect was gained in this setting, it’s money you want to spend.”

While WHO provides global guidance on managing insecticide resistance, Yukich said countries also need implementation strategies that are specific for their regions. The insecticide resistance study could be a starting point.

“I do think it will have impact, certainly within Sudan,” he said. “There are lessons to be learned for other places.”