

# Malaria elimination in Sub-Saharan Africa predicted to be possible under right conditions

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Small community in the Lake Kariba area of southern Zambia where malaria elimination programs are currently underway. Credit: Milen Nikolov (CCBY)

Malaria elimination in historically high transmission areas like southern

Africa is possible with tools that are already available, provided those tools are deployed aggressively - according to new research published in *PLOS Computational Biology*.

While the past century has seen many countries eliminate [malaria](#), and many regions have dramatically reduced malaria burden in the last fifteen years, no sub-Saharan African country has yet eliminated malaria. In the Lake Kariba region of Southern Province, Zambia, villages with high and low malaria burden are interconnected through human travel, making elimination potentially very challenging.

Milen Nikolov and colleagues at the Institute for Disease Modeling (Bellevue, WA), the Zambia National Malaria Control Centre (Lusaka, Zambia), and PATH Malaria Control and Elimination Partnership in Africa (Lusaka, Zambia), combine a mathematical model of [malaria transmission](#) with field data from Zambia to computationally test a variety of strategies for eliminating malaria in a southern African setting.

The authors used detailed spatial surveillance data from field studies in southern Zambia to construct a model of interconnected villages, then tested a variety of intervention scenarios to see which ones could lead to elimination.

The study shows that elimination requires high, yet realistic, levels of vector control, and mass drug campaigns deployed to kill parasites within the human population can boost the chances of achieving elimination as long as vector control is well-implemented.

The results of their work suggest that elimination programs in sub-Saharan Africa should focus on how to achieve and maintain excellent coverage of vector control measures rather than spending resources on mass drug campaigns that are predicted to have little effect without well-implemented [vector control](#) already in place. Human movement within

the region should be targeted to achieve elimination as well as the importation of infections from outside the region. This is because both impact the likelihood of achieving elimination and understanding regional movement patterns can help guide strategies on targeting specific groups of at-risk people.

While no sub-Saharan African country has yet eliminated malaria, the authors predict that regional [malaria elimination](#) is nevertheless within reach with current tools, provided the efficacy and operational efficiency attained in southern Zambia can be extended and targeted to other key areas.

**More information:** Nikolov M, Bever CA, Uphill-Brown A, Hamainza B, Miller JM, Eckhoff PA, et al. (2016) Malaria Elimination Campaigns in the Lake Kariba Region of Zambia: A Spatial Dynamical Model. *PLoS Comput Biol* 12(11): e1005192. [DOI: 10.1371/journal.pcbi.1005192](#)

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