

If you are one of the over 3 billion people at risk for malaria worldwide, then the very structure of your house can impact the odds that you will get malaria. One analysis of survey data from 21 countries in sub-Saharan Africa found that modern housing features were associated with a 9-14% reduction in the odds that a child in the house would be infected with malaria - a protective effect comparable to what a child receives from sleeping under an insecticide-treated bed net.¹ In this instance, modern housing referred to houses built with finished walls (e.g. cement, bricks), floor (e.g. parquet, vinyl), and roof (e.g. metal, ceramic tile). Houses built with these types of materials tend to provide fewer openings for malaria mosquitoes to enter the house, thus protecting people inside from infectious mosquito bites. Other housing modifications that block mosquito entry into the house, such as sealing open eaves (the space between the top of the wall and the roof), installing ceilings, and putting screens on windows, can also provide protection.

In the same way that an insecticide-treated bed net acts both as a barrier that keeps mosquitoes away from a sleeping person and by killing mosquitoes that contact the bed net, housing modifications can be combined with insecticides for an even greater impact. For example, installing insecticide-treated material at the eaves² or insecticide-treated window screens.³ This pairing turns the house into a “lethal lure”⁴, which draws in mosquitoes looking for a bloodmeal and then kills them, protecting both the household and their surrounding community.



In malaria-endemic countries, the very structure of your house can impact the odds that you will get malaria.

Good quality housing does not only protect against malaria. The same features that keep out malaria mosquitoes can also keep out the insects that transmit dengue, yellow fever, Zika, Chagas disease, and other vector-borne diseases. Beyond vector-borne diseases, good quality housing reduces the risks of illnesses from diarrhoeal diseases to respiratory infections.⁵ Indeed, access to good quality housing is an issue that sits at the intersection of public health, environmental sustainability, economic development, and fundamental human rights.

Because it is a complex issue, one of the primary questions around house modification for malaria control is who holds responsibility for implementation? Until now, the fight against malaria has been largely donor driven and top down. Ministries of health, international funders, and non-governmental organizations are typically responsible for providing access to malaria control interventions through bed net distribution campaigns and indoor residual

spray campaigns, while house modifications are well outside of their purview. Moreover, self-built houses are widespread in Africa, and building norms and regulations can be difficult to enforce.⁶ Lastly, house modifications for malaria control comprise a broad set of interventions, which makes it difficult to define targets for product development and routes to market for any new products.

A path forward may be found in another growing challenge, namely the unprecedented demand for housing in Africa. One source recently estimated that meeting the housing needs in Africa will require the equivalent of building housing for 7,000 people every hour until 2050.⁷ While this is a daunting prospect, it can also be seen as an opportunity for the creation of millions of jobs and further economic development – and for multisectoral collaboration in the fight against malaria.

As old houses are repaired and new houses are built, there is the opportunity to make houses more mosquito-proof, with window screens, closed eaves, and well-fitted doors. There is also the opportunity to create houses with good air circulation, to improve comfort and encourage the use of bed nets.⁸ And if insecticide-treated screening can be added to windows or the eaves of houses, there is the opportunity to have millions of houses across Africa working passively to kill mosquitoes and protect communities from disease as people sleep. It is clear that the opportunities are manifold for vector-borne disease control through improved housing. It is now up to us to reach out to our colleagues across sectors and work collaboratively to improve both housing quality and access, as well as global health.

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