

# Modern housing reduces malaria risk

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Credit: CDC

Housing improvements could reduce malaria cases by half in some settings, according to research published in the open access *Malaria Journal*.

As mosquitoes become resistant to insecticides and [malaria](#) parasites become resistant to drugs, researchers looked at how making changes to houses might contribute to tackling the [deadly disease](#).

Researchers reviewed 90 studies in Africa, Asia and South America comparing malaria cases in traditional houses (mud, stone, bamboo or wood walls; thatched, mud or wood roofs; earth or wood floors) and modern houses (closed eaves, ceilings, screened doors and windows).

They found residents of modern homes were 47% less likely to be infected with malaria than those living in traditional houses, and residents were 45-65% less likely to have clinical malaria (fever with infection).

The study was led by the London School of Hygiene & Tropical Medicine in partnership with Durham University and the University of California, San Francisco.

Lead author Lucy Tusting from the London School of Hygiene & Tropical Medicine, said: "Housing improvements were traditionally an important pillar of public health, but they remain underexploited in malaria control. Good [housing](#) can block mosquitoes from entering homes and prevent them from transmitting malaria to the people who live there.

"Our study suggests housing could be an important tool in tackling malaria. This is a welcome finding at a time when we are facing increasing resistance to our most effective [insecticides](#) and drugs. We now need to pinpoint which housing features can reduce mosquito entry in different settings, to incorporate these into local housing designs and to assess the impact on malaria in large-scale field trials."

Malaria, a life-threatening disease caused by parasites that are transmitted to people through the bites of infected mosquitoes, causes more than half a million deaths per year, mostly among African children.

The authors note that the effectiveness of improving housing will vary depending on the location. While many mosquitoes enter homes to bite humans at night, outdoor malaria-transmission is more common in some places, meaning interventions centered on the home will have less impact.

Co-author Professor Steve Lindsay from Durham University, added: "Improved housing has huge potential to reduce malaria transmission around the globe and to keep malaria at bay where we have eliminated it. Since many of the world's major vector borne diseases are transmitted indoors, improved housing is likely to be protective against diseases like dengue, leishmaniasis, Chagas disease and lymphatic filariasis.

"In many parts of the tropics development is occurring at an unprecedented rate and the quality of housing is improving too. Across much of sub-Saharan Africa thatched-roofed houses are being

replaced by metal-roofed housing. We need to ride this wave of house improvement and develop new ways of protecting people against the insects that transmit so many deadly and debilitating diseases. Good housing should line-up alongside clean water and sanitation as major public health interventions."

While the studies eligible for inclusion in this new review were of low quality, the authors say the consistency of the findings indicate that housing is an important risk factor for malaria.

**More information:** Lucy S Tusting, Matthew M Ippolito, Barbara A Willey, Immo Kleinschmidt, Grant Dorsey, Roland Gosling, Steve W Lindsay. The evidence for improving housing to reduce malaria: a systematic review and meta-analysis. *Malaria Journal*. DOI: [10.1186/s12936-015-0724-1](https://doi.org/10.1186/s12936-015-0724-1)

Provided by London School of Hygiene & Tropical Medicine

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