

Can behaviour change communication improve malaria control?



In the past two decades, about 25% of the total funds for malaria (~US\$4 billion in 2023) has been historically donated by the USA.¹ A reported US\$68 million is indicated to have been spent on research and development of vector control strategies in 2023, with an emphasis on insecticide-treated nets (ITNs) and insecticidal products.¹ As funding landscapes shift, malaria control programmes and their implementing partners must diversify strategies to sustain progress against the disease. The persistent transmission of malaria despite huge efforts to deliver timely case management and universal access to ITNs indicates that these core strategies might be reaching the limit of what they can achieve on their own, highlighting the need for complementary interventions.

Moiroux and colleagues report in *The Lancet Global Health* the results of a cluster-randomised controlled trial (cluster-RCT)² that took place in Burkina Faso and Côte d'Ivoire between 2016 and 2018 to quantify the potential epidemiological benefits of non-pyrethroid indoor residual spraying (IRS) with a pirimiphos-methyl formulation or behaviour change communication (BCC) as complementary strategies to core interventions (long-lasting insecticidal nets [LLINs] and case management). BCC, in particular, might offer a promising addition to current vector control strategies in the context of reduced global funding.³

Carefully designed, adequately powered, and well executed cluster-RCTs with epidemiological endpoints can provide high-quality evidence of the potential effects of new malaria prevention strategies.^{4,5} Such trials are acknowledged in WHO guidelines as key sources of evidence for issuing strong or conditional recommendations in support of (or against) vector control and other malaria control strategies.⁶ As the first cluster-RCT on BCC in west Africa to include epidemiological outcomes,² these findings are especially compelling, showing that the addition of BCC to LLINs resulted in a reduction in malaria cases measured through passive case detection of 22% (rate ratio 0.78 [95% CI 0.63–0.96]). This effect was similar to the reduction of 23% achieved with the addition of non-pyrethroid IRS to LLINs (0.77 [0.64–0.93]).

Recent work has shown that inferences from trial data could be affected not only by the sampling strategy,⁷ which is often guided by power estimates from an a-priori understanding of the trial setting,⁸ but also by the analytical method applied.⁹ In their study,² Moiroux and colleagues adopted an intention-to-treat approach and used constrained baseline analyses, providing additional analyses in the appendix (eg, by country) that help to support conclusions regarding efficacy. As the authors note, the constrained baseline approach avoids potential misspecification issues because it explicitly incorporates baseline data into the model. Sensitivity analyses to assess the effects of constraint on baseline values and of missing data produced similar results, indicating that the findings were robust to the choice of analyses. A wide range of statistical approaches to analyse cluster-RCT data is available,⁹ however, a set of decision pathways that could help cluster-RCT researchers to identify the most appropriate methods to ensure sufficient power and analyse trial data comprehensively does not yet exist, and should be considered in future research.

BCC is essential to the success of most malaria prevention strategies and is particularly crucial for the effective use of ITNs. ITNs remain a cornerstone of malaria control, with cluster-RCTs showing that use of new dual-active ingredient nets leads to nearly 50% reductions in malaria cases compared with standard pyrethroid-only nets.^{4,5} However, the effectiveness of ITNs in operational settings depends heavily on consistent and correct use at the household level. Therefore, BCC has a vital role—by addressing behavioural, cultural, and informational barriers, raising awareness, correcting misconceptions, and promoting regular net use—in enhancing intervention adherence and ensuring that the full protective benefit of ITNs is achieved and sustained.

One crucial element that was not addressed in the study by Moiroux and colleagues is cost-effectiveness.² An important next step would be to quantify whether strengthening ITN effectiveness through BCC—even with intensive efforts from health workers—proves more cost-effective than deploying

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additional resource-intensive interventions such as IRS. This is a particularly important consideration in the context of declining global health funding, but also from the perspective of community resilience and environmental sustainability.¹⁰ Reduced funding often restricts the generation of data on these vital metrics during cluster-RCTs. We must not lose sight of the importance of information on cost-effectiveness and efficacy, but also on potential adverse effects on longer-term health or cascading ecological effects (greenhouse gas emissions from scaled use, waste management challenges, or non-target organism effects, for instance), to support responsible action.

Beyond its direct impact, BCC fosters community engagement, builds trust, and encourages long-term participation in disease prevention efforts and could offer an opportunity to maintain and advance progress in malaria control while geopolitical instability continues to affect funding and supply chains.

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