Malaria testing yet to reach its potential

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Credit: CDC

In a study published this month in *Malaria Journal*, researchers from Uppsala University and other institutions present a new model for systematically evaluating new malaria treatment programs in routine conditions across multiple countries.

Despite major investments in malaria rapid diagnostic tests (RDT) in recent years, there remains limited evidence of their impact on treatment decisions in routine program conditions. Evidence to date is largely

derived from small-scale facility studies conducted within a limited number of countries, notably Kenya, Malawi, Tanzania, Uganda and Zambia.

This study is the first to systematically compare program experiences across multiple countries using a mixed-methods approach that brings together population- and facility-based data, program documents, research studies and expert opinions.

The researchers analysed routinely implemented national household surveys from 12 malaria-endemic African countries to investigate the effect of malaria diagnostic testing on treatment decisions at the population level across countries and key sub-national groups, including by malaria risk, transmission season, child's age, child's symptoms and source of care. A multiple case study design was subsequently employed to help explain differences found across selected countries and groups.

"We found major differences across countries in how malaria testing affects treatment decisions, and no country showed reductions in malaria treatment associated with testing as hypothesized. These results are largely explained by contextual factors such as access to care and stock outs. It is critical to understand the implementation context of new programs. Controlled study trials of RDT adherence in facilities, while important, are not available for most countries and cannot show this type of result," says Emily White Johansson, doctoral student and lead author of the study.

By analysing different country experiences using a common approach, the researchers developed four key themes that largely explained program variation: available medicines and supplies; quality of care; care-seeking behaviours and malaria epidemiology. For example, countries with poor access to formal care or where diagnostics are largely concentrated at hospitals generally showed much higher treatment odds

associated with testing. Indeed, children in these countries that reach facilities with malaria diagnostics generally have better access to medicines and are more severely ill, both of which increase treatment likelihood.

One conclusion made by the researchers is that countries need to expand access to testing and care, and improve quality fever management in order to improve population-level results, as exemplified by Rwanda. Expanding access to testing and care is also critical to ensure that non-severe febrile illnesses are at least as likely to get tested as severe cases. Diagnosis of non-severe cases is arguably more important given the overlap of initial malaria symptoms with other illnesses, the critical need to reduce delays in appropriate fever care, and the plausible better test adherence for non-severe cases, as highlighted in case studies.

"We need to focus on improving access to testing and care through community-based programs that manage sick children in an integrated manner. At the same time, we need to improve quality of care at facilities by deploying RDT with enhanced training packages and as part of integrated fever management protocols," says Stefan Swartling Peterson, professor and one of the researchers behind the study.

More information: "The effect of diagnostic testing on medicines used by febrile children less than five years in 12 malaria-endemic African countries: a mixed-methods study", *Malaria Journal*

Provided by Uppsala University