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Editor's Note: Please [hyperlink to the abstract](#) on the AJTMH site; it will be available once the embargo lifts.

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Study Links Malaria Rapid Diagnostic Tests to More Antibiotic Prescriptions and Finds Ignored Results

Scientists find curbing the overuse of antimalarial drugs often replaced by overuse of antibiotics instead; study also reveals puzzling cases of malaria patients testing positive yet going untreated

Oakbrook Terrace, Ill. (August 7, 2017)—Rapid diagnostic tests (RDTs) for malaria are reducing overuse of malaria medications but may also produce a range of unintended results, according to a comprehensive new study published today in the *American Journal of Tropical Medicine and Hygiene*. An analysis of more than 500,000 patient visits across malaria-endemic regions of Africa and Afghanistan found that in most settings, introduction of RDTs improved antimalarial targeting, but negative test results prompted a shift to antibiotic prescriptions. Even more concerning: a substantial number of patients who tested positive for malaria appeared to go untreated.

Researchers from the London School of Hygiene and Tropical Medicine (LSHTM) found that, overall, RDTs are effective at limiting—though not eliminating—what had been a common practice: routinely prescribing powerful malaria medications known as artemisinin combination therapies (ACTs) to patients presenting with fever but without malaria, which could accelerate the emergence of ACT-resistant malaria.

“But we found that in many places a reduction in the use of ACTs was accompanied by an increase in the use of antibiotics, which may drive up the risk of antibiotic-resistant infections,” said Katia Bruxvoort, PhD, MPH, an assistant professor at the London School and the lead author of the study. “We also don’t yet understand why some patients who tested positive for malaria were not treated with ACTs.”

The scientists believe the shift to antibiotic use after ruling out malaria, which also was explored in a [March study in *The BMJ* that included analysis of some of the same patient visits](#), may indicate that many patients and providers are not comfortable with what might be the best approach to treating many fevers when malaria has been ruled out: taking a fever-reducing drug (like ibuprofen or paracetamol) and drinking plenty of fluids.

“A key challenge is that we don’t currently have a reliable way to determine which fevers are evidence of a bacterial infection that requires a specific antibiotic treatment and which fevers will resolve with supportive care only,” Bruxvoort said.

Bruxvoort and her colleagues analyzed drug prescriptions written from 2007 to 2013 in 562,368 patient encounters documented in 10 related studies—eight from sub-Saharan Africa and two from Afghanistan—conducted by the ACT Consortium, a global research initiative investigating key issues around anti-malarial drugs.

This expanded analysis also revealed:

- In most areas studied, which included clinics in Ghana, Cameroon, Tanzania, Nigeria, and Uganda, antibiotics were given to 40 to 80 percent of patients who had tested negative for malaria.
- In many areas, a negative test for malaria was only partially effective at limiting ACT prescriptions. For example, in two areas, Cameroon and Ghana, 39 to 49 percent of patients who tested negative for malaria still got ACTs.
- Overall, 75 percent of patients studied left the clinic with either an antibiotic or an ACT.

Even more surprising, the scientists said, was finding that in five of the eight African studies included in this analysis, more than 20 percent of patients who tested positive for malaria were not prescribed ACTs.

“Drug supply issues did not seem to be a problem in most of the areas where these patients sought treatment,” Bruxvoort said. “There might be other reasons either patients or providers are not using ACTs in these contexts, but the issue of undertreating malaria, even when there is clear evidence of the disease, is troubling and deserves further study.”

Use of RDTs for malaria has soared since 2010 as officials from the World Health Organization have sought to reduce unnecessary prescriptions for ACTs, thought to be a major factor in the rise of drug-resistant malaria in Southeast Asia. In Africa, which accounts for the large majority of the world’s malaria infections, ACTs have been a major factor in the 60 percent drop in malaria deaths over the last 15 years. Experts fear those gains could be rapidly reversed if ACT-resistant malaria spreads across the continent.

Meanwhile, overuse of antibiotics is implicated in the global rise of antibiotic-resistant infections that are becoming one of the world’s biggest public health challenges. A report last year commissioned by the United Kingdom estimated that 700,000 people die each year from infections caused by drug-resistant microbes.

“In addition to the important concerns raised by this study, it demonstrates the value of researchers who carefully follow the real-world impact of malaria innovations like rapid diagnostic tests,” said Patricia F. Walker, MD, DTM&H, FASTMH, and President of the American Society of Tropical Medicine and Hygiene. “The number of patient encounters documented here is extraordinary and provides an unvarnished assessment of why treating a patient who walks into a clinic with a fever remains a complex challenge. Technology alone cannot solve complex health problems; community and provider education, as well as health system changes, must occur hand in hand to improve patient outcomes.”

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