

The ACT Consortium

We are a **global research partnership** of public health and academic institutions in Africa, Asia, Europe and the United States.

Our 25 studies address the **access, targeting, safety and quality of artemisinin-based combination therapy (ACT)**.

We look at the effectiveness of ACTs over time, cost-effectiveness of delivery strategies, acceptability, safety, and how to improve ACT use by prescribers and patients.

We test a range of strategies based on **rapid diagnostic tests (RDTs)** and targeted behaviour change communication methods.



Questions or comments?

If you would like to discuss these research results and how they may be used in real-world public health, we would be delighted to hear from you.

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For research results, journal articles, videos, training manuals and Principal Investigators' contact details, please visit www.actconsortium.org.

1. COMMUNITY-BASED HEALTH CARE PROGRAMMES

Use of malaria rapid diagnostic tests (RDTs) to improve malaria treatment in the community in Uganda



This randomised study aimed to improve rational and correct use of ACT drugs.

The study compared community health workers (CHWs) using RDT-based diagnosis, versus diagnosis based on symptoms only. It was done in western Uganda, in two areas with different malaria transmission intensities; 379 CHWs in 120 communities participated. Ministry of Health researchers trained CHWs in RDT use, malaria case management and referral, and held community meetings to raise awareness about RDTs.

CHWs adhered to RDT results. Over a period of 18 months, more than 85% of ACT treatments given were correctly based on RDT results.

When CHW treatment decisions were compared with expert microscopy, correctly targeted treatment was significantly higher in villages where CHWs used RDTs, versus symptom-based treatment: 79% versus 31% ($p < 0.001$) in the high transmission area, and 90% versus 8% ($p < 0.001$) in the low transmission area. CHWs who used RDTs referred more patients to health facilities.

STUDY CONCLUSIONS

Use of malaria RDTs by CHWs can improve malaria diagnosis, and help to ensure that patients receive appropriate malaria treatment. Community members understand that not all fever is caused by malaria, and can accept RDT testing. As a result, the number of ACT treatments given can reduce dramatically.

www.actconsortium.org/RDThomemanagement

2. PRIVATE HEALTH CARE SECTOR

Introducing rapid diagnostic tests (RDTs) in drug shops to improve the targeting of malaria treatment



This randomised study introduced malaria RDTs in registered drug shops in Uganda. Many countries have rolled out RDTs in the public sector, but there is not yet much evidence on their use in the private sector. The study was done in 65 drug shops in central Uganda. Ministry of Health researchers trained drug shop vendors in RDT use, malaria case management and referral. Community volunteers helped to raise awareness of RDTs in the local area.

Uptake of RDTs in drug shops was high. In a one-year period, over 15,000 clients sought treatment in drug shops and 98% accepted to buy an RDT. RDTs were offered at subsidised cost (approx. US \$0.20). More than 85% of ACT treatments given by drug shop vendors were correctly based on RDT results. When treatment decisions by vendors were compared with expert microscopy, correctly targeted treatment was significantly higher in shops where vendors used

RDTs, versus symptom-based treatment: 73% versus 34% ($p < 0.001$).

Drug shop vendors did not refer many patients to health facilities. Interviews with vendors and community members showed that the intervention changed the reputation of drug shops.

STUDY CONCLUSIONS

RDTs are likely to be popular in the private health care sector. Clients are willing to buy RDTs at subsidised prices, and trained drug shop vendors can use RDTs correctly. RDT training in drug shops can improve the quality of malaria care; it can also change the reputation of drug shops. Programmes to introduce RDTs in drug shops may wish to plan for possible wider consequences, including implications for treatment seeking and general standards of care in the private sector.

www.actconsortium.org/RDTdrugshops and www.actconsortium.org/RDTperceptions

3. HEALTH CARE FACILITIES

The PRIME & PROCESS studies:

Improving health centres to reduce childhood malaria in Uganda



This randomised trial assessed whether a complex intervention delivered at public health centres could improve children's health and appropriate use of antimalarials.

The intervention was done in eastern Uganda. It included training in-charges in health centre management, training health workers in fever case management with RDTs, training health workers in patient-centred care, and ensuring adequate supplies of artemether-lumefantrine (A-Lu) and RDTs.

The PROCESS study evaluated how the PRIME intervention worked in practice, to provide information for future programmes on behaviour change.

The PRIME supply of A-Lu and RDTs successfully "filled the gap" between government supply and patient demand. Small improvements were seen in fever case management. However, the intervention did not seem to affect the overall health of children; the prevalence of

anaemia in this area was the same as children in a control area without the intervention.

Important issues at health centres were not addressed by the PRIME intervention, including staffing shortages, poor infrastructure, payment of staff salaries and delivery of health centre funds.

STUDY CONCLUSIONS

The multi-component PRIME intervention appeared to improve malaria case management, communication between health workers and patients, and patient satisfaction with care. But these improvements were small, and we did not see improvements in health outcomes of community children. Additional malaria prevention measures will be required in this high malaria transmission setting. To improve quality of health care within the public sector, infrastructure and wider systems and political issues must be addressed.

www.actconsortium.org/PRIME and www.actconsortium.org/PROCESS

4. POLICY FOR MALARIA DIAGNOSIS AND TREATMENT

IMPACT 2: Evaluating policies in Tanzania to improve malaria diagnosis and treatment



To tackle challenges related to ACT access and targeting, the government of mainland Tanzania implemented two interventions across the nation:

rolling out malaria RDTs in public health facilities, and introducing subsidised ACTs through the AMFm (Affordable Medicines Facility-malaria) mechanism.

The research team conducted a set of studies to assess the effectiveness of these 2 policies in improving the accessibility and quality of malaria diagnosis and treatment.

After the introduction of RDTs, surveys in 3 regions of Tanzania found significant improvements in diagnostic testing for malaria, and reduced over-use of ACTs. However, after the roll-out almost 50% of febrile patients still did not receive a diagnostic test, and almost 50% of patients who tested positive did not receive ACTs. Stock-outs of ACTs and RDTs were important problems.

After the AMFm roll-out, a survey showed that the availability of quality-assured ACTs improved to 69.5% (versus 25.5% before AMFm) in outlets that stock antimalarials. The greatest increase was in pharmacies and drug stores, where the average ACT price for an adult treatment fell from US \$5.63 to \$0.94. Household

survey results found an increase in clients seeking care at pharmacies and drug stores, where ACT use also increased. However, follow-up testing showed that ACTs were not always well-targeted to patients with lab-confirmed malaria.

STUDY CONCLUSIONS

RDTs can lead to significant improvements in fever case management and ACT use in the public sector. However, stock-outs of ACTs and RDTs are a key challenge. New solutions must be found to improve reliability of supplies, and to further enhance treatment quality and use.

ACT subsidies are an effective way to improve availability, reduce price and increase market share of quality-assured ACTs in the private health sector. Among private for-profit care providers, strong communication campaigns appear to improve both awareness of the subsidised ACT, and knowledge of correct first-line antimalarial treatment.

Programmes should carefully consider the advantages and disadvantages of increasing availability of diagnostics in private outlets.

www.actconsortium.org/IMPACT2

5. TRAINING TO IMPROVE TARGETING OF ACT DRUGS

The TACT trial: Health worker and community interventions to improve adherence to Tanzania's national guidelines for ACT use



This randomised study aimed to improve both the management of malaria cases and the treatment of other diseases that also cause fever. The study was conducted in 36 health

facilities in Tanzania, divided into three groups.

The first group received RDTs and basic training in how to use them. The second group of health workers received RDT training, messages from senior staff and monthly supervision sessions. The third group received the same package as the second group, plus a community-based intervention to modify patients' expectations.

A related study also looked at safety of using RDTs to diagnose and treat young children. The researchers assessed a series of 965 children age 3 to 59 months,

all presenting with non-severe febrile illness. Use of RDTs to direct treatment did not result in any missed diagnoses of malaria. However, a small percentage (0.6%) became RDT-positive after study enrolment. Invasive bacterial disease was uncommon in children without severe symptoms, and most cases occurred in febrile infants.

STUDY CONCLUSIONS

The TACT trial demonstrated that training health workers for two days decreased the number of ACT prescriptions by approximately 75%. This improvement suggests that over-use of malaria drugs may reduce over time.

Training and motivational SMS can have a positive effect on prescribing practices. Informational leaflets for patients can improve the way health staff use rapid diagnostic tests.

www.actconsortium.org/TACT

6. ADHERING TO RDT RESULTS

Trusting rapid diagnostic tests in Zanzibar



In Zanzibar, malaria transmission has reduced to very low levels.

This observational study was conducted in 12 public health facilities during the region's

malaria transmission seasonal peak. The study team assessed whether a histidine-rich-protein-2 (HRP2) based RDT could detect *Plasmodium falciparum* among fever patients, and if primary health care workers continued to adhere to RDT results in the new context of low malaria transmission. We also evaluated RDT performance within the newly adopted integrated management of childhood illness (IMCI) algorithm in Zanzibar.

We enrolled 3890 patients aged 2 months with uncomplicated febrile illness. Overall just 3.1% of patients were RDT positive. RDT sensitivity and specificity against blood smear microscopy was 78.6%

(95% CI 70.8–85.1%) and 99.7% (95% CI 99.6–99.9%), respectively. All RDT positive, but only 3/3768 RDT negative patients received anti-malarial treatment. RDT performed well in the IMCI algorithm with equally high adherence among children under five as compared with other age groups.

STUDY CONCLUSIONS

RDTs can be reliably integrated in IMCI as a tool for improved childhood fever management. However, RDT sensitivity was relatively low in the hands of health care workers; this highlights the need for improved quality control of RDT use in primary health care facilities, but also for more sensitive point-of-care malaria diagnostic tools in the new epidemiological context of low malaria transmission in Zanzibar.

www.actconsortium.org/RDTZanzibar

ONGOING RESEARCH FROM EAST AFRICA

Project	Countries
<p>Quality and authenticity of ACT drugs</p> <p>This surveillance study across several countries purchased ACT samples to understand whether we should be concerned about the quality and authenticity of ACT drugs in Africa and South-East Asia. We have analysed more than 10,000 samples.</p> <p>Results are more reassuring than other recent reports. Final results will be publicly available soon.</p> <p>www.actconsortium.org/drugquality</p>	<p>Rwanda, Tanzania, Nigeria, Equatorial Guinea, Ghana and Cambodia</p>
<p>Safety of antimalarial drugs</p> <p>The safety database was created to collect data from several ACT Consortium studies, and to become a useful tool for the wider research and public health communities. The database currently holds over 700 safety reports from studies within the ACT Consortium, comprising serious and non-serious adverse events, collected by both clinicians and non-clinicians.</p> <p>The database undergoes continuous monitoring for potential safety issues. So far, no specific concerns with ACT drugs have arisen.</p> <p>www.actconsortium.org/drugsafetydatabase</p>	<p>Uganda, Tanzania, Malawi, South Africa and Afghanistan</p>
<p>Treating malaria in HIV-positive individuals</p> <ul style="list-style-type: none"> • InterACT: Interactions between malaria and HIV drugs in a malaria endemic area in Tanzania www.actconsortium.org/InterACT • SEACAT: Interactions between malaria and HIV drugs in people living with HIV www.actconsortium.org/SEACAT • Collecting safety data in antimalarial drug trials www.actconsortium.org/safetydatacollection 	<p>Tanzania and South Africa</p>
<p>Identifying non-malaria illnesses that cause fever</p> <ul style="list-style-type: none"> • CONFIT and CONFIA This prospective observational study in Tanzania and Afghanistan aims to understand the approach that different countries take to manage cases of non-malaria illnesses that also cause fever. www.actconsortium.org/CONFITandCONFIA • Children under five in Zanzibar This prospective study aims to understand the causes of fever in children under five in Zanzibar and how these cases are managed within the Integrated Management of Childhood Illness (IMCI). www.actconsortium.org/childrenfeverzanzibar 	<p>Tanzania and Afghanistan</p>