

# Training health workers to improve malaria diagnosis

in Cameroon and Nigeria

The World Health Organization (WHO) recommends that patients are tested for malaria before receiving antimalarial treatment, but many health workers still diagnose patients based on their signs and symptoms alone. This often results in malaria overdiagnosis and overtreatment.

Researchers from the REACT studies in Cameroon and Nigeria evaluated different types of health worker training and community education interventions to address this problem of overdiagnosis and support the effective scale-up of rapid diagnostic tests (RDTs) for malaria.



*REACT Investigator Dr Olivia Achonduh during training session with health workers in Cameroon*

In Cameroon, we found that the training led to a decrease in malaria overdiagnosis, preventing the wastage of artemisinin-based combination therapy (ACT), the recommended treatment for malaria. In contrast, the training interventions in Nigeria did little to change behaviour. The levels of malaria testing remained very low and health workers were still wasting expensive malaria drugs on patients who did not need them.

The challenges of designing and implementing effective behaviour change interventions to support the roll-out of malaria testing should not be under-estimated. Many studies have investigated the performance of RDTs in ideal settings. With this research we aimed to see how our interventions influenced behaviours, according to the different types of health services and context. Our studies show that, in order to improve the targeting of malaria medicines, governments need to focus more on changing behaviour of health workers as well as the expectations of patients and their families.

## Why is it important to improve malaria diagnosis?

The WHO recommends that health workers test patients for malaria before prescribing antimalarial treatment.

For decades, however, many health workers in malaria endemic countries treated patients based on their signs and symptoms, without testing their blood for the presence of malaria parasites. This can result in patients with a fever being overdiagnosed with malaria and receiving an ACT medicine which they don't need.

Microscopy is a method that requires laboratory equipment and qualified staff, while rapid diagnostic tests (RDTs) represent a relatively simple alternative form of testing that has the potential to provide accurate and timely diagnosis to those unable to access good quality microscopy services.

## What did we do?

### CAMEROON



The three-day training package was more interactive, using card games, drama and problem solving exercises. (credit Olivia Achonduh)

This study compared the use of RDTs when packaged with either a basic or a comprehensive training programme for health workers.

The more effective training package lasted three days and was designed to change prescribing practices.

In addition to the content of the basic package, which only provided conventional training on RDTs, malaria diagnosis and treatment, the comprehensive package had smaller groups and longer discussions about clinical guidelines, real-life scenarios and effective communication with patients.



### NIGERIA



Children at malaria awareness activities in a Nigerian school

In the state of Enugu, Nigeria, almost 5,000 participants from 40 communities took part in the study, at a variety of public primary health facilities, pharmacies and drug stores.

The researchers split the health workers into three groups: one received comprehensive RDT training, another one received the same training plus a health campaign in schools, while the control arm received basic instructions to use RDTs.



Malaria rapid diagnostic test

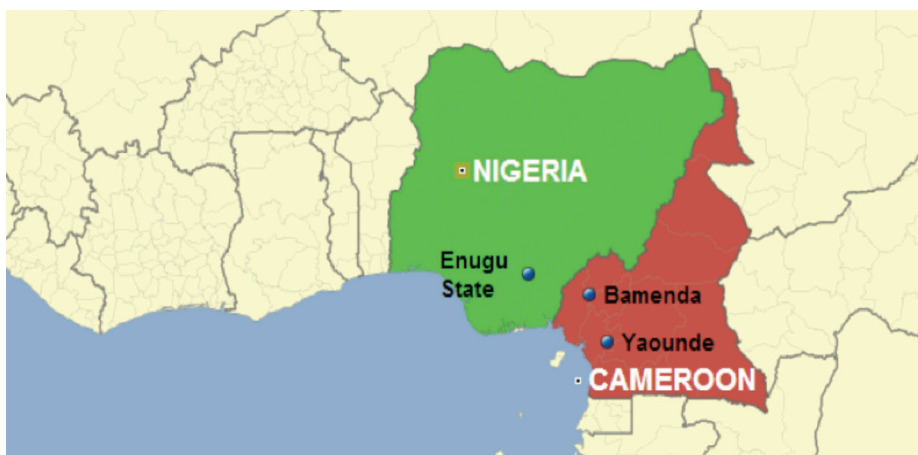


Provider training in Nigeria



## What did we find?

- In **Cameroon**, we found that interactive training programmes for health workers reduced malaria overdiagnosis by half, helping to prevent the wastage of antimalarials on patients who didn't need them.
- Over-use of antimalarials following a negative test result fell from 84% in the control arm (standard practice) compared to:
  - 52% in basic training group
  - 31% in the comprehensive training group.
- In **Nigeria**, there was no strong evidence that the supporting interventions improved malaria diagnosis and treatment. Levels of testing remained critically low in all groups with:
  - 34% of patients tested in the control group (standard practice)
  - 48% of patients tested in the health worker training group
  - 37% of patients tested in the health worker training plus school education group.



## What are the implications of these studies on malaria policy?

- Rapid diagnostic tests are new technologies that have the potential to greatly assist nurses and doctors in making life-saving decisions at the point-of-care.
- Basic training alone is unlikely to be sufficient to support the behaviour change required for the introduction of RDTs. Our results from Cameroon show that health workers not only need training to diagnose and treat malaria, but also need guidance on how to translate that knowledge into prescribing practice and improved quality of care.
- We must continue to explore **alternative ways of encouraging providers to deliver appropriate diagnosis and treatment**. Successful behaviour change interventions hold the key to realising the full potential of malaria rapid diagnostic tests.

- Our research also shows that a "one size fits all" approach will not work in the context of scaling up RDTs. In Nigeria, diagnosis of malaria based



School based interaction in Nigeria

If we are serious about improving the targeting of malaria medicines by using RDTs, then there needs to be a far greater focus on behaviour change. This study, the first of its kind in Cameroon and Nigeria, highlights that health workers not only need training to diagnose and treat malaria, but most of all need the confidence to put what they learn into practice and to communicate more effectively with patients about why they are tested and that fever is not always caused by malaria.

*Dr Virginia Wiseman, Principal Investigator*

## Further information

### REACT Cameroon: key publications:

Main findings: Mbacham WF, Mangham-Jefferies L, Cundill B, Achonduh OA, Chandler CIR, Ambebila JN, et al. Basic or enhanced clinician training to improve adherence to malaria treatment guidelines: a cluster-randomised trial in two areas of Cameroon. *The Lancet Global Health*. 2014;2(6):e346-e58.

Mangham-Jefferies L, Wiseman V, Achonduh OA, Drake TL, Cundill B, Onwujekwe O, et al. Economic Evaluation of a Cluster Randomized Trial of Interventions to Improve Health Workers' Practice in Diagnosing and Treating Uncomplicated Malaria in Cameroon. *Value in Health*. 2014.

Achonduh O, Mbacham W, Mangham-Jefferies L, Cundill B, Chandler C, Pamen-Ngako J, et al. Designing and implementing interventions to change clinicians' practice in the management of uncomplicated malaria: lessons from Cameroon. *Malaria Journal*. 2014;13(1):204.

Chandler CIR, Mangham L, Njei AN, Achonduh O, Mbacham WF, Wiseman V. 'As a clinician, you are not managing lab results, you are managing the patient': How the enactment of malaria at health facilities in Cameroon compares with new WHO guidelines for the use of malaria tests. *Social Science & Medicine*. 2012 5//;74(10):1528-35.

Wiseman V, Mangham LJ, Cundill B, Achonduh OA, Nji AM, Njei AN, et al. A cost-effectiveness analysis of provider interventions to improve health worker practice in providing treatment for uncomplicated malaria in Cameroon: a study protocol for a randomized controlled trial. *Trials*. 2012;13:4. PubMed PMID: 22225699. Pubmed Central PMCID: PMC3307479. Epub 2012/01/10.

### REACT training manuals Cameroon:

These training materials are available through the ACT Consortium along with the study protocol and papers that describe problems in malaria case management in Cameroon identified in formative research for this study.

[www.actconsortium.org/REACTmanuals](http://www.actconsortium.org/REACTmanuals)



### REACT Nigeria: key publications:

Main findings: Onwujekwe O, Mangham-Jefferies L, Cundill B, Alexander N, Langham J, Ibe O, et al. (2015) Effectiveness of Provider and Community Interventions to Improve Treatment of Uncomplicated Malaria in Nigeria: A Cluster Randomized Controlled Trial. *PLoS ONE* 10(8): e0133832. 2015.

Ibe O, Mangham-Jefferies L, Cundill B, Wiseman V, Uzochukwu B, Onwujekwe O. Quality of care for the treatment for uncomplicated malaria in South-East Nigeria: how important is socioeconomic status? *International Journal for Equity in Health*. 2015;14(1):19.

Ezeoke OP, Ezumah NN, Chandler CC, Mangham-Jefferies LJ, Onwujekwe OE, Wiseman V, et al. Exploring health providers' and community perceptions and experiences with malaria tests in South-East Nigeria: a critical step towards appropriate treatment. *Malaria journal*. 2012;11:368. PubMed PMID: 23130706. Pubmed Central PMCID: PMC3507662. Epub 2012/11/08. eng.

Mangham LJ, Cundill B, Ezeoke O, Nwala E, Uzochukwu BS, Wiseman V, et al. Treatment of uncomplicated malaria at public health facilities and medicine retailers in south-eastern Nigeria. *Malaria journal*. 2011;10:155. PubMed PMID: 21651787. Pubmed Central PMCID: PMC3120734. Epub 2011/06/10. eng.

Wiseman V, Ogochukwu E, Emmanuel N, Lindsay JM, Bonnie C, Jane E, et al. A cost-effectiveness analysis of provider and community interventions.

### REACT studies:

[www.actconsortium.org/REACTCameroon](http://www.actconsortium.org/REACTCameroon)  
[www.actconsortium.org/REACTNigeria](http://www.actconsortium.org/REACTNigeria)

## Contact and acknowledgments

### Principal Investigators

Dr Virginia Wiseman, *London School of Hygiene & Tropical Medicine (REACT Cameroon and REACT Nigeria)*:  
[virginia.wiseman@lshtm.ac.uk](mailto:virginia.wiseman@lshtm.ac.uk)

Prof Obinna Onwujekwe, *University of Nigeria, (REACT Nigeria)*: [onwujekwe@yahoo.co.uk](mailto:onwujekwe@yahoo.co.uk)

Prof Wilfred Mbacham, *University of Yaoundé, Cameroon (REACT Cameroon)*:  
[wjmbacham@yahoo.com](mailto:wjmbacham@yahoo.com)



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