

A village meeting to award community-based health workers their training certificates and open a health hut to provide basic care, malaria diagnosis and treatment. Tambacounda district, Senegal



## Diagnosis of Delivery System Disorders: an analysis of the delivery of ACTs through the public sector, private sector and the community

The Mobilize Against Malaria (MAM) project is funded by Pfizer with assistance from TARGETS researchers. The aim is to investigate interventions for increasing prompt and effective treatment with Artemisinin Combination Therapy (ACTs), working with caregivers and children under five years of age in three countries. In Kenya the intervention works with public sector providers, in Ghana with Licensed Chemical Sellers (LCS), and in Senegal with community-based health workers. Interventions in all three countries involve messaging for providers and users, and training of providers to improve fever treatment in children under five.

An analytical framework was developed to identify critical steps in the continuum between access, delivery of the drug, and its effective use. The analytical framework provides a simple method of comparing the impact of disorders of delivery of ACTs through different systems within the same country, similar systems within different countries, and different systems within different countries. The significant evidence being amassed through such a project provides a varied and wide-ranging evidence base for international, national and district level strategic planning and focussing of resources.

“Identifying blockages in delivery systems is central to ensuring effective delivery of interventions to those most vulnerable to communicable diseases. Members of the TARGETS Consortium have developed a diagnostic tool that cuts through the complexity of delivery systems to identify critical points where corrective treatment needs to be employed.”

Jayne Webster, TARGETS Researcher

## From Fever to Anti-Malarial: the process of seeking and receiving appropriate treatment in rural Senegal

National and international targets of 80% of malaria cases receiving appropriate treatment are not being met. There are several stages involved in receiving appropriate treatment. Understanding at which stage children are lost from the appropriate treatment process is key to developing effective interventions.

As part of the MAM Project, TARGETS researchers undertook a two-stage cluster designed household survey in southeast Senegal to investigate the treatment-seeking practices of caretakers of children under five years with fever in the previous two weeks. Researchers used multivariate logistic regression to investigate determinants of action at different stages in the process of seeking and receiving treatment.

The research found that 61.6% of children under five years with fever were given any treatment, although the proportion of febrile children seeking treatment at a community-level delivery point was only 7.8% (compared to 31.5% and 17.0% accessing a formal public health facility or informal private source, respectively). The likelihood of the children seeking treatment at a community-level delivery point receiving an anti-malarial was 4 times greater than those that first sought care in the formal public sector.

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Ghana Social Marketing Foundation, Ghana: [www.gsmf.com.gh](http://www.gsmf.com.gh)  
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Health Partners International, Ghana: [www.healthpartners-int.co.uk/ghana/](http://www.healthpartners-int.co.uk/ghana/)

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## Policy and Practice - join the debate

### The protective efficacy and safety of three antimalarial regimens for IPTi: a randomised, double-blind, placebo-controlled trial

“Our research in Tanzania shows that intermittent preventive treatment for malaria in infants (IPTi) with a longacting, efficacious drug such as mefloquine can reduce episodes of malaria in infants in a moderate-transmission setting. IPTi with sulfadoxine-pyrimethamine has no benefit in areas of very high resistance to this combination. The appropriateness of IPTi should be determined by the expected incidence of malaria and the efficacy, tolerability, and safety of the drug.”

Daniel Chandramohan, TARGETS Researcher

TARGETS researchers Daniel Chandramohan and Ilona Carneiro are working with Roly Gosling, Jacklin Masha Samwel Gesase et al. as part of a study funded by the IPTi Consortium and by the Gates Malaria Partnership, both of which are supported by the Bill & Melinda Gates Foundation. A full account of the research findings is published in the *Lancet*: Gosling R, Gesase S, Masha J F, Carneiro I, Hashim R, Lemnge M, Masha FW, Greenwood B, Chandramohan D. *Lancet* 2009 Sep 16

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### How many years of life could be saved if malaria were eliminated from a hyperendemic area of northern Ghana?

“Our results show that between about one fourth and one third of all deaths in this population are attributable to malaria, depending on the age group considered. Striking differences exist by age: mortality from malaria is highest in childhood - about 45% of the deaths due to malaria occur to children. Overall, the results suggest that if malaria were eliminated from this population, life expectancy at birth could be expected to increase by more than 6 years.”

Ayaga Bawah, TARGETS researcher, INDEPTH, Ghana

TARGETS partner INDEPTH is an international network of sentinel demographic sites, which provides data and research to guide the cost-effective use of tools, interventions and systems to ensure and monitor progress towards national goals. The network is based in Accra, Ghana, and represents 37 sites in 19 countries. This quotation refers to research published in the *American Journal of Tropical Medicine and Hygiene*, 77 (Suppl 6), 2007, pp. 145-152 by Ayaga Bawah and Fred Binka.

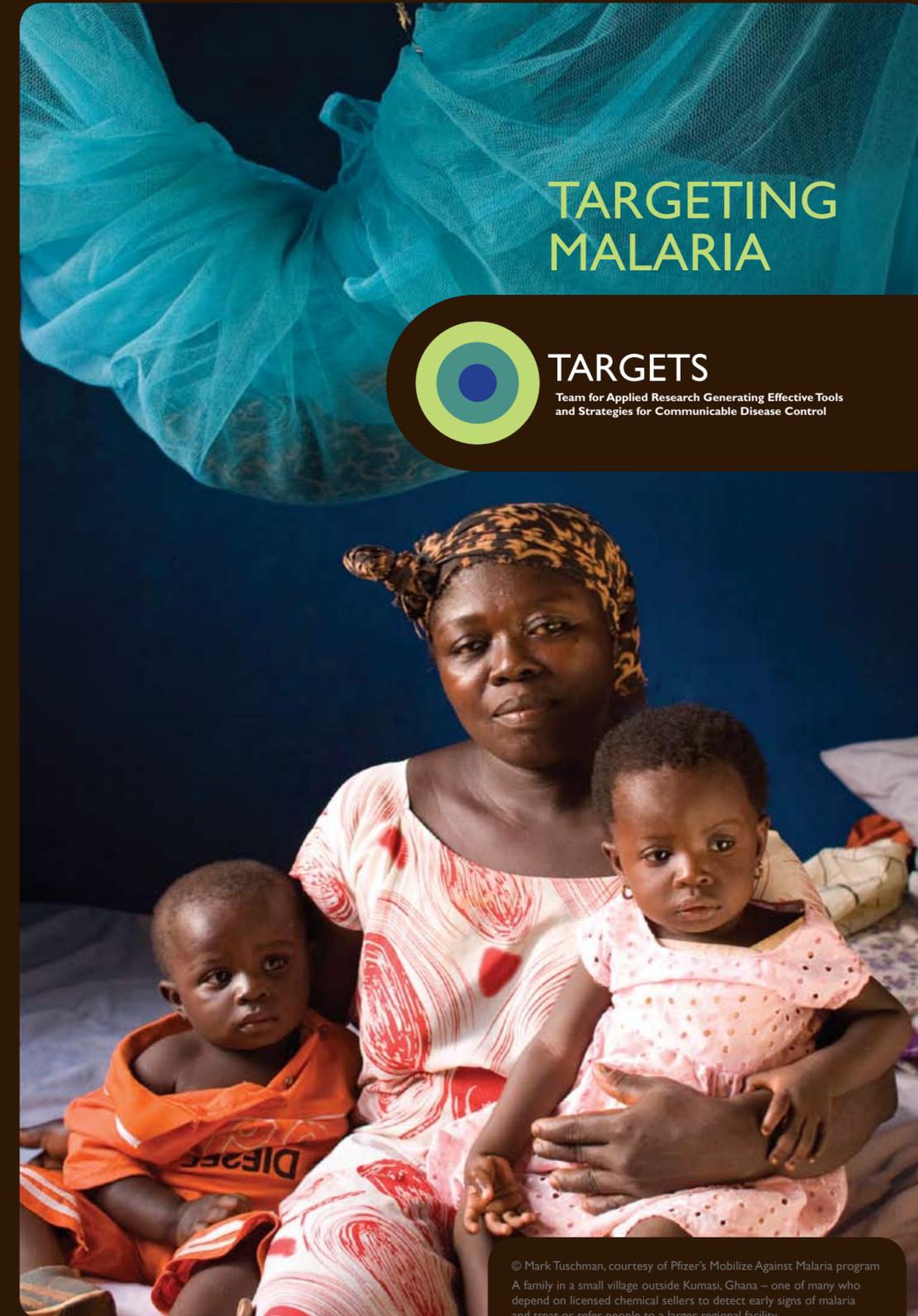
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The TARGETS RPC is formed by seven partner organisations:

Ifakara Health Institute, Tanzania: [www.ihrdc.ortz](http://www.ihrdc.ortz)  
Maharashtra Association of Anthropological Sciences, Centre for Health Research and Development (MAAS-CHRD), India  
ZAMBART (Zambia AIDS-Related TB Project), Zambia: [www.zambart.org](http://www.zambart.org)  
INDEPTH Network, Ghana: [www.indepth-network.org](http://www.indepth-network.org)  
Makerere University, Uganda: <http://med.mak.ac.ug>  
KNCV Tuberculosis Foundation, The Netherlands: [www.kncv.nl](http://www.kncv.nl)  
London School of Hygiene and Tropical Medicine, UK: [www.lshtm.ac.uk](http://www.lshtm.ac.uk)

For more information about TARGETS research go to [www.targetskonorsium.org](http://www.targetskonorsium.org) or contact Alexandra Hyde: [Alexandra.Hyde@lshtm.ac.uk](mailto:Alexandra.Hyde@lshtm.ac.uk)

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# TARGETING MALARIA



## TARGETS

Team for Applied Research Generating Effective Tools and Strategies for Communicable Disease Control

© Mark Tuschman, courtesy of Pfizer's Mobilize Against Malaria program  
A family in a small village outside Kumasi, Ghana – one of many who depend on licensed chemical sellers to detect early signs of malaria and treat or refer people to a larger regional facility.

# TARGETING MALARIA

The Team for Applied Research Generating Effective Tools and Strategies for Communicable Disease Control (TARGETS) is a Research Programme Consortium (RPC) funded by the UK Department for International Development (DFID). The Consortium brings together partners in Sub-Saharan Africa, India and Europe working towards better health for the poor and vulnerable through more effective communicable disease control. Our focus is on the world's 'killer diseases' and on overcoming the barriers to effective control of these diseases - an essential step towards achieving the Millennium Development Goals (MDGs).

Now in its fifth year, the TARGETS RPC continues to generate crucial evidence to support health policy and practice worldwide. This booklet outlines the ongoing impact of our research on the treatment and prevention of malaria, the growth and capacity of our partnerships and the implications of our research findings at local, national and international level.

“Major global health initiatives have brought new opportunities and increased funding, but in order to deploy these investments effectively, programme managers need much better knowledge of the advantages and disadvantages of different strategies, and of the barriers which limit coverage and access for the most vulnerable. Our idea is to fill this gap”

Jo Lines, TARGETS Researcher

## Implementing and Sustaining Strategies for Malaria Control through the Health System: lessons from the Tanzania National Voucher Scheme

Since 2004 the Government of Tanzania has implemented a nationwide voucher scheme to increase coverage of ITNs among pregnant women and children under five. Researchers from LSHTM and the Ifakara Health Institute have worked closely with key stakeholders in Tanzania throughout the process to investigate the factors enhancing and constraining effective implementation, the acceptability of the approach and the degree of institutionalization of the strategy.

This comprehensive evaluation of the Tanzanian TNVS demonstrated that there were significant year-on-year increases in household ownership of any type of bednet but that the voucher scheme in itself was not sufficient to redress social inequity in the ownership of bednets: the poorest socio-economic strata of Tanzania, particularly those in remote rural areas, continued to have the least access and lowest coverage estimates. Early monitoring activities identified a number of health system variables which, once identified and addressed, contributed to an improvement in the distribution of bednet vouchers and increased use of the vouchers for bednet purchase. The research also revealed that the public-private partnership approach to the implementation of the scheme was widely supported at district level and had become a fully integrated component of district activities.

Ifakara Health Institute holds a wealth of information on equitable access to ITNs, on the impact of the voucher scheme on the commercial net market and on the overall sustainability of the approach, contributing relevant experience to the current debate on the ITN delivery strategies for other African nations.

## The Tanzania National Voucher Scheme: reaching the poor with health communication messages

Health communication campaigns are often intended to reach the public at large across many different social strata. However, many of these campaigns are not yet reaching the poorest and most vulnerable households successfully. We aimed to examine the effectiveness of the ongoing Tanzania National Voucher Scheme (TNVS) mass communication strategies and disaggregated audience findings by socio-economic status.

We found that radio had the best media coverage and campaign exposure (58.7% households' heads and 53.13% women). However, there was strong evidence linking radio listening and social economic status, the poorest women representing 32.6% while their better-off counterparts represented 68.8% of the audience. Roadshows were found to reach the poorest women slightly better than radio. If well organised, roadshows could be a better medium for a more equitable coverage of health communication messages.

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Key publication: Hanson K, Marchant T, Nathan R, Mponda H, Jones C, Bruce J, Mshinda H, Schellenberg JA (2009). Household ownership and use of insecticide treated nets among target groups after implementation of a national voucher programme in the United Republic of Tanzania: plausibility study using three annual cross sectional household surveys. *British Medical Journal* 2009;338:B2434

## Policy and Practice - join the debate Malaria Early Warning Systems: an obvious and growing need

Research in East Africa shows that quickly detecting, not predicting, malaria epidemics is the key to disease control. Over the last decade, academics and international agencies, most notably the WHO, have promoted malaria early warning systems (MEWS) as a way of improving how decision-makers manage epidemics, by giving them more time to plan and respond.

Rather than battling with complicated environmental disease models based on remote sensing climate data, researchers, in partnership with government ministries and international agencies, should be trying to solve the more tractable challenges of detecting emerging epidemics early — they need appropriate and sustainable case monitoring systems.

Of course, providing these is a far from trivial task, and for many developing countries it will require new specialised, streamlined monitoring systems as well as new or enhanced diagnostic services. It will be a major challenge to introduce mechanisms that do not over-burden already overstretched health systems. Another challenge will be to convince policymakers that the extra resources required for these monitoring systems are justified.

Decision-support mechanisms that quickly translate epidemic warnings into a series of explicit and predefined responses are also essential. Experience from Uganda and Kenya has

shown that without major changes to the way malaria control programmes respond to emergencies, potential benefits offered by MEWS are unlikely to be realised.

Now is the time to redress the balance and position MEWS as a standard approach for national surveillance, rather than a tool that is specific to one epidemiological 'niche'.

Systems that use handheld computers or mobile phones to rapidly send and receive data on cases from remote health units have already been developed in Tanzania, Thailand and other countries. Documenting these pioneering efforts will be important to determine best practice and identify common issues around implementation.

Ironically, once in place, these systems will begin to generate the large amounts of high quality disease data that modellers need to develop and test more reliable predictive early warning models. It's high time we put the horse back before the cart.

This is an extract from an article by TARGETS researcher Jonathan Cox in *SciDev.Net*, 9th September 2009. To read the article in full go to [www.scidev.net](http://www.scidev.net).

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Early Warning Systems for Malaria in Africa: from blueprint to practice *Trends in Parasitology* 23 (6): 243 - 246



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A free paediatric consultation in Namentenga region, Burkina Faso. Work by TARGETS researcher Mark Rowlands and his team in Benin has recently found clear evidence that pyrethroid resistance does have the potential for causing ITNs and IRS to fail to control malaria transmission. This worrying development is spreading to Burkina Faso, Niger and Guinea.

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Searching the river margins for mosquito larvae, a rice paddy site for mosquito collections and surveillance in Qila Ali, Nangarhar, Afghanistan.



## Malaria Control in a Complex Emergency Context: process and impact lessons from Afghanistan and refugees in Pakistan

The National Malaria Control Programme in Afghanistan has over the past 15 years undertaken a series of operational research projects relating to the use of insecticide treated nets (ITNs), indoor residual spraying (IRS) and chemotherapy for the control of malaria. The results from these projects have been effectively incorporated into the national programme's malaria control strategy. Building on the previous DFID Malaria Knowledge Programme (2001-05) and continuing into the long-term with technical assistance from the TARGETS Consortium, the national-level (Afghanistan) control programme has adopted and applied innovative malaria control strategies appropriate for complex emergencies and fragile states.

Control strategies were scaled up only after operational research had demonstrated efficacy, cultural acceptability and safety, thus providing a solid evidence base for appropriate malaria policy. Experience in Afghanistan and refugee camps in Pakistan is particularly relevant for the current eradication/elimination agenda where malaria ceased to be a public health problem through an integrated approach to control. Amazingly, Afghanistan is heading in that same direction even though the health system is still very underdeveloped – malaria can be controlled on its fringes.

“Malaria can be cost-effectively controlled in complex emergency and fragile state settings. The development and application over fifteen years of appropriate control strategies has successfully reduced the malaria burden in Afghanistan and among Afghan refugee populations in Pakistan. Falciparum malaria is virtually eliminated in northern and eastern Afghanistan despite the ongoing war. In the Afghan refugee camps of Pakistan both vivax and falciparum malaria have ceased to be a problem.”

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An epidemic of Plasmodium falciparum malaria in Afghan refugees in the Tribal Areas of Pakistan fuelled by substandard antimalarial drugs. *Emerging Infectious Diseases*, 15 (11)