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# DIME BRIEF

## Zambia: reducing inefficiencies in the antimalarial supply chain

The Development Impact Evaluation Initiative is a broad-based World Bank program to generate knowledge on the effectiveness of government programs. It supports government agencies adopt a culture of real time evidence-based policy-making on the basis of rigorous impact evaluation. By testing how to make policies work, it contributes to improving policy performance.

DIME works with 300 agencies in 72 countries across 15 thematic programs to generate knowledge, improve quality of operations and strengthen country capacity for evidence-based policy-making.

This impact evaluation is part of the Malaria Impact Evaluation Program.



Photo: Benoist Carpentier

### Background

Zambia holds a mixed record in malaria control. On the one hand, the country has made great strides in providing universal access to preventive services. By way of illustration, between 2006 and 2008 the fraction of households owning at least one bed net rose from 48% to 72%.

Despite progress in improving access to prevention, case management remains weak. A 2008 survey established that a meager 11% of children under-five living in urban areas and 5% of those in rural areas took Artemisinin-based combination therapy (ACT), the state-of-the-art antimalarial, within the same/next day of fever onset.

The government of Zambia thus acknowledged the need to urgently improve access to and guarantee the availability of antimalarial drugs and diagnostic tools, leading to the creation of the Zambia Access-to-ACT Initiative (ZAAI).

### Impact evaluation

Earlier analyses showed that underperformance in case management could principally be attributed to inefficiencies in public drug supply: while distribution proceeded fairly efficiently from the central medical store to the districts, bottlenecks appeared in deliveries from district stores to individual public health facilities (HF). This, in turn, results in frequent stock-outs of ACTs and rapid diagnostic tests (RDTs).

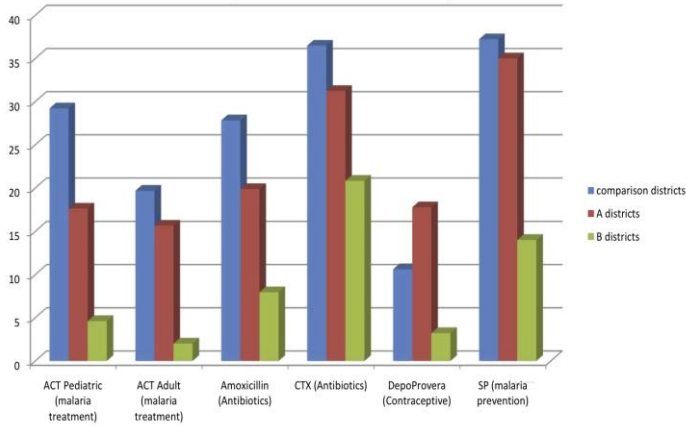
The principal objectives of ZAAI were therefore to identify the most cost-effective method of enhancing public sector supply chains, determine to what extent the private sector could be harnessed to increase access to ACTs and RDTs, and quantify the combined impact of interventions in both public and private sectors on household decision-making and treatment-seeking behavior.

In the public sector, two primary channels for revamping public supply chains were identified. First, efficiency increases could be achieved through a reconfiguration of resources in the existing distribution system at the district level, i.e. through introducing a Community Planner (CP) responsible for effective stock management and coordinating timely and accurate information from HFs (System A). Stock-outs could also be averted through changes in the structure of the distribution network itself, on top of the changes in System A. District stores could serve as 'cross-docking points', i.e. as a pass through for consignments already packed and labeled for individual HFs, eliminating the need to hold stocks at the district level (System B).

The public sector intervention was implemented in peri-urban and rural districts, since malaria prevalence in urban areas is relatively low and the health system performs comparatively well. 16 out of a total of 58 peri-urban and rural districts received one of the two interventions, with 8 assigned to System A (district stores + CP), and 8 to System B (cross-docking + CP). An additional 8 districts were selected to serve as controls (existing system).

As roughly 42% individuals who seek care for fever do so in private facilities, ZAAI

Number of days of stockouts for the last quarter of 2009



includes a private sector component which evaluates the effects of an ACT and RDT price subsidy as well as several accompanying interventions – such as repackaging, suggested retail price, public awareness campaigns and incentives to wholesalers – on the stocking, dispensing and household demand for ACTs.

A rapid analysis of retail and wholesale outlets in six districts preceded the intervention. The highest volume product was Sulfadoxine-Pyrimethamine (SP) at 61%. Only 25% of private sector outlets had ACT stocks, which sold for almost 15 times the price of SP. High prices, together with a perception of low demand and overwhelming SP market penetration act as principal barriers to a more widespread use of ACTs.

To mitigate these adverse conditions, a system of subsidies was introduced. ACT prices were set at the lowest possible level for end-patients, making them competitive with the price of SP. The level of co-payment for RDTs was set in such way that the cost of diagnosis to the end-patient was minimal/zero, in order to induce demand for diagnosis prior to taking ACTs.

Due to the high costs of ACT and RDT subsidization, the private sector intervention was limited to four districts. These were selected to ensure that communities with high malaria burden and limited access to ACTs and RDTs would benefit from inclusion in the scheme. All private outlets meeting certain eligibility criteria could qualify to sell the subsidized ACTs and RDTs.

## Impact evaluation results

Results of the public sector study show that System B (cross-docking + CP) results in dramatic increases in ACT availability at public HFs. If implemented on a nationwide scale this new supply model has the potential of reducing both child and adult malaria-related mortality by 21% and 25% respectively. Furthermore, System B is four times as cost-effective as System A (only CP) – while the latter reduces stock-out day of one tracer drug at a cost of \$14.50 per day in additional operating costs, the former achieves the same reduction at a cost of just \$4.20 per day.

Preliminary results of the private sector intervention show that both diagnostic capacity and ACT use have increased in the intervention areas. Exit interviews show that as many as 80% of febrile patients were offered an RDT in accredited stores. These gains were matched by a significant increase in the use of ACTs, and a reduction in the use of ineffective antimalarials. Almost 83% of clients purchasing antimalarials in these facilities chose an ACT, versus a mere 17.2% in non-accredited outlets.

The results suggest an overall improvement in the availability and use of effective treatment. A greater proportion of fever cases are seeking care, being diagnosed with RDTs, and receiving ACTs. Most gains are attributable to improvements in service from public facilities. However, the contribution of increased availability in the private sector is also apparent.

## Policy recommendations

Acknowledging the impressive impact of the new public supply method, Zambia decided to scale up the direct-order system nationwide, which is expected to result in 16,000 fewer malaria-related deaths in children under five by 2015. Private sector results demonstrate that there is a vital role to be played by private providers in reducing the malaria burden. However, the widespread implementation of such an approach necessitates further regulatory reform.

Although the study focuses on ACTs, the underlying objective is to provide an example for the supply of *all* essential drugs. Extending the innovative supply schemes to cover drugs outside the category of antimalarials would probably yield even greater gains for the health care system as a whole.

Source:

Friedman, Jed; Vledder, Monique; Sjoblom, Miria; Yadav, Prashant. (unpublished). "Zambia: Improving Access to ACTs."



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