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The Challenge of Ensuring Adequate Stocks of Essential Drugs in Rural Health Clinics

Health experts and policymakers want people to have access to affordable and high-quality medical care. But in some developing countries, making quality healthcare available may first necessitate ensuring that essential medicines are available, such as anti-malaria pills and antibiotics. The challenge to guaranteeing a steady supply is not only related to the financial side of paying for medicines. Poor roads, limited communications and storage problems can make it difficult to keep medical facilities stocked with what they need to provide children and adults with regular and lifesaving care.

The World Bank is working to help countries provide quality medical care, a key part of many of the United Nations Millennium Development eight goals. Recently, in Zambia, the World Bank supported a project exploring how to guarantee the availability of essential medicines in often-remote health facilities. The 12-month study, which covered almost 22 percent of Zambia's rural population, found that streamlining the delivery of medicines directly to health centers and introducing a dedicated staff member to help facilitate and track orders cut down on the rate at which clinics ran out of basic medicines. The focus on just one aspect of good healthcare—making certain necessary supplies are in stock in medical clinics—does not answer all the questions that experts face in building or supporting functioning health systems. But it may help them as they work towards creating the quality healthcare that all people deserve.

Case Study Zambia

Zambian officials were frustrated by shortages of essential medicines in public health facilities in rural and semi-rural parts of the country. Clinics frequently reported that they had run out of basic lifesaving drugs, such as antibiotics and anti-malarial drugs, leaving children and adults at greater risk of illness or death. The problem was not the availability of the necessary drugs in the country overall. It was the distribution system.

While the government had a working system for moving medical supplies from the capital Lusaka to district stores and hospitals, it was less efficient at getting supplies from district stores to local health facilities. District Health Management Teams, which reported to the Ministry of Health, were responsible for sending supplies from the district stores to some 1,500 health facilities. Reaching the facilities could be challenging. The facilities were spread out and some roads required special, off-road vehicles. Communications between the facilities and the district stores were intermittent—usually via two-way radio. Local facilities were running out of medicines at a rate that was double or more that reported by district stores, a clear sign that drugs were not getting to where they were needed.

A pilot program, consisting of two different models for distribution, was initiated to test the best way to overcome the bottleneck at the district level. In Model A, a commodity planner was put in place at the district level. The person was responsible for making certain that health

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Life expectancy in Zambia is 45 years.

And the under-5 mortality rate is 141 per 1,000…

Compared with an average of 129 for sub-Saharan Africa.

clinics submitted accurate monthly orders to the district store, for collating the clinic orders, and then placing the bulk order with the central medical stores with the national stock of drugs, called Medical Stores Limited. The goal was to ensure that the district stockroom had a ready supply of items for the clinics. The planner would put together packages for the clinics and arrange transport.

In Model B, health facilities submitted orders directly to the central Medical Stores Limited. The district store, instead of stocking drugs, acted as a point of transit, receiving and forwarding-on already packaged orders with the help of a new commodity planner. The planner worked with health facilities to make sure they got their orders in properly to the central stores and also delivered the packages as they arrived.

The pilot began in April 2009 and ran for 12 months. The two models were each implemented in 8 rural and semi-rural districts, randomly selected out of a total of 50 possible districts. An additional eight districts were selected for observation as controls. A baseline survey was conducted prior to the start of the pilot, and then again at the end. Information was collected on the inventory and stock-out rates of 15 drugs, in addition to interviews with the community planners.

The Findings

Hiring a special facilitator to work directly with health facilities, while minimizing the role of district stores for storing and delivering medicines, helped clinics stay better stocked.

In Model A, which introduced a commodity planner to coordinate orders, the stock-out rates for needed drugs ranged from 17 percent to 46 percent after one year, depending on the particular drug, compared with the baseline rate ranging from 34 percent to 74 percent. In Model B, in which the role of the district office was further minimized, the out-of-stock rate for drugs ranged from 1 percent to 33 percent, compared with a baseline rate of 40 percent to 72 percent.

Life-saving malarial drugs were among those more likely to be in stock, especially in health facililties that directly ordered their own supplies from the central stores.

Health facilities that had more control over ordered medical supplies were better able to maintain needed supplies of essential drugs. At the end of the 12-month pilot, malaria treatments for adults were out-of-stock in 6 percent of facilities, while pediatric treatment was out of stock in 12 percent. This compared with a previous rate of 48 percent for adult treatments and 43 percent for pediatric treatment. In facilities that relied on the regular system, but now had a commodity planner to help coordinate orders, the stock-out rate for adult malaria treatment was 22 percent (compared with 43 percent before the study) and for pediatric treatments, 30 percent, down from 34 percent.

When looking at the number of days that essential drugs were unavailable, health facilities in Model A did only marginally better than the control group.

Pediatric malaria drugs, for example, were out of stock an average of 29 days, out of a maximum of 92 days, in the control facilities. For facilities in Model A, the stock-out duration averaged 18 days; in districts in Model B, the average number of days this essential medication was out of stock dropped to five days.

This bulletin summarizes the results of the research paper "Enhancing Public Supply Chain Management in Zambia" by Monique Vledder, Jed Friedman, Mirja Sjoblom and Prashant Yadav. The paper is based on the results of the World Bank-supported Essential Drug Public Pilot Program in Zambia, which was funded by the World Bank, U.S. Government and DFiD.

Introducing a commodity planner into the system helped facilities better coordinate their orders with the central agency.

The rates at which health facilities placed regular orders with the central agency, a key part of ensuring the availability of drugs at the district level, rose to 95 percent or better. This compared with a pre-pilot rate of 72 percent to 79 percent, depending on the district.

"The program has worked very well. Now people have access to medicines. Despite the hardships, I would consider continuing as a commodity planner," another planner concluded.

Nonetheless, commodity planners still faced some of the same transportation, storage and communications problems that district stores faced in getting medicines to remote clinics.

Commodity planners had to rely on vehicles and fuel provided by the district health office to get the supplies to the clinics. This meant they were "competing" with other programs for use of vehicles. They also did not always have sufficient storage space for medicines shipped in from the central agency. Communicating with the facilities was another problem. Most health facilities have to rely on two-way radio, which made it difficult for community planners to be in contact on a regular basis.

Researchers estimated that if Model B were implemented nationwide, malaria-related deaths could drop by more than 20 percent.

In children under the age of five, the number of deaths annually from malaria may decline to an estimated 12,218, from an estimated 15,538 currently. In the over-five age group, deaths from malaria would drop to 1,318 from 1,766 annually. This is a result solely due to the increased availability of life-saving drugs at the clinic.

And when essential drugs are available, households are less likely to lose income because a working adult is ill or has to stop working to care for an ill child.

Researchers estimated that if Model B were applied throughout Zambia, more than $1.6 million annually in expected household income loss would be avoided. In turn, this means that families would be less likely to have to sell assets, pull children out of school or lose crops because of the often-devastating economic-related effects of severe illness.

The cost of taking steps to boost the availability of essential drugs in rural clinics is not cheap. But it is still worthwhile.

Model B cost an additional $3,971 per district per month, while Model A, which was not as effective, cost $3,479. More than half went for the commodity planner's salary, with the remainder covering expenses associated with staff-related expenses, office supplies and training. When weighed against stock out rates, Model B is almost four times more cost-effective than Model A.

The *Zambia National Malaria Indicator Survey* (2008) reported that just seven percent of children in rural areas under the age of five received pediatric ACT (Artemisinin-Based Combination Therapy)—the most effective first-line medicine for malaria—within 24 hours of starting a fever.

Conclusion Making policy from evidence

Model B, in which district stores were reduced to transit points for shipments to health facilities, was so successful that it has now been extended to all districts that were in the pilot study. Further expansion throughout the country will require additional funding, which donors and Zambian officials are now considering.

But as the pilot underscores, successful distribution of drugs is about more than just money—or having the right amount of stocks in district or national centers. At the same time, the study does not consider what happens after essential medicines get to health facilities. Are people able to access what they need? Is the quality of care, in other words, on par with the new-level of available drugs? These are questions that policymakers and health experts need to consider next.

The Human Development Network, part of the World Bank Group, supports and disseminates research evaluating the impact of development projects to help alleviate poverty. **The goal is to collect and build empirical evidence that can help governments and development organizations design and implement the most appropriate and effective policies for better educational, health and job opportunities for people in developing countries.** For more information about who we are and what we do, go to: http://www.worldbank.org/hdchiefeconomist

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