

## RESEARCH INSIGHTS

# Can SMS Messages Improve Private Provider Treatment of Childhood Diarrhea? Evidence from a Randomized Controlled Trial in Ghana

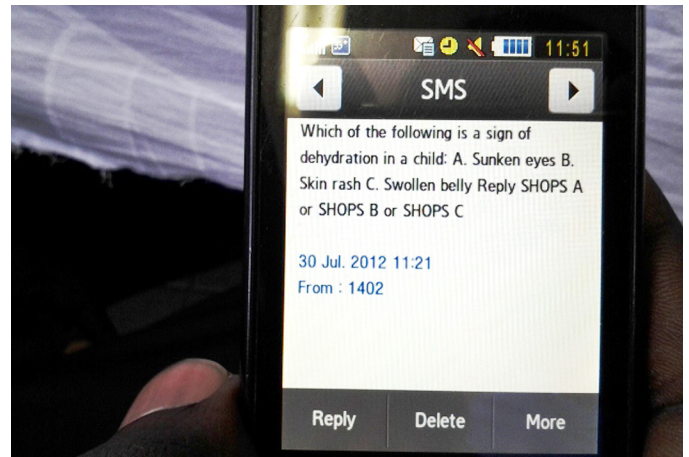
This study evaluated a mobile phone message-based intervention to promote appropriate treatment of pediatric diarrhea among drug sellers in Ghana. The results of the randomized controlled trial show that text messages improved providers' knowledge of appropriate treatments but not their actual practices.

Diarrhea is a leading cause of death among children in the developing world. Since 2004, UNICEF and WHO have recommended oral rehydration solution (ORS) and zinc as the safest and most effective treatment for acute pediatric diarrhea. However, this treatment is a relatively new alternative to antimicrobial and antidiarrheal treatments, which are not recommended for uncomplicated pediatric diarrhea.

Private for-profit providers are an important source of treatment for childhood diarrhea in developing countries. However, working with private sector providers may require different approaches from those used with public sector providers. In 2012, the Strengthening Health Outcomes through the Private Sector project trained licensed chemical sellers (LCS), providers licensed to sell basic medicines, in the provision of ORS and zinc for uncomplicated pediatric diarrhea. To explore a low-cost intervention to reinforce the training, SHOPS tested a mobile phone text message (SMS)-based intervention consisting of informational messages and interactive quizzes. Many international health organizations are implementing SMS interventions, but currently there is limited rigorous evidence of their effectiveness.

### Methods

This study was conducted in the Central, Greater Accra, and Western regions of Ghana. It randomly assigned 455 LCS facilities to a treatment group whose staff received the SMS messages and 455 to a control group whose staff did not receive the messages. The study used two complementary data collection methods. A face-to-face provider interview was used to assess self-reported practices—a proxy measure for knowledge of appropriate treatment options, while a mystery client survey assessed actual behavior. The mystery client survey interviewers visited LCS, posing as a client with a child who is suffering from uncomplicated diarrhea (no blood in stool).



Benjamin Woodman

*Mobile phone text messages quizzed participants on the proper treatment for uncomplicated diarrhea.*

## Key Findings

- The SMS messages led to an increase in the proportion of drug sellers who reported providing treatments in accordance with WHO recommendations.
- The SMS messages did not lead to detectable improvements in actual provider practices.
- Providers' self-reported practices deviated sharply from their actual practices, particularly in the provision of antimicrobials.
- Providers' experiences with customer refusals and demands may contribute to the difference between reported and actual practices.

The study asked: To what extent did the SMS intervention that followed the initial trainings lead to a change in knowing the appropriate treatment to provide (as indicated by providers' reported practices) and in providing the appropriate treatment?

## Key Findings

### The SMS messages led to an increase in the proportion of drug sellers who reported providing treatments in accordance with WHO recommendations.

When interviewers asked LCS what they most commonly recommend for management of childhood diarrhea, a higher proportion of treatment group members reported appropriate treatment practices. The intervention increased the number of LCS that reported recommending ORS and zinc by 9.3 percent. In addition, the intervention decreased the number of LCS reporting recommendation of antimicrobials by 48.6 percent.<sup>1</sup>

### The SMS messages did not lead to detectable improvements in actual provider practices.

Despite the larger proportion of LCS in the treatment group reporting appropriate practices, these providers' actual practices were similar to those of providers assigned to the control group. Thus, the intervention did not appear to improve actual provider practices.

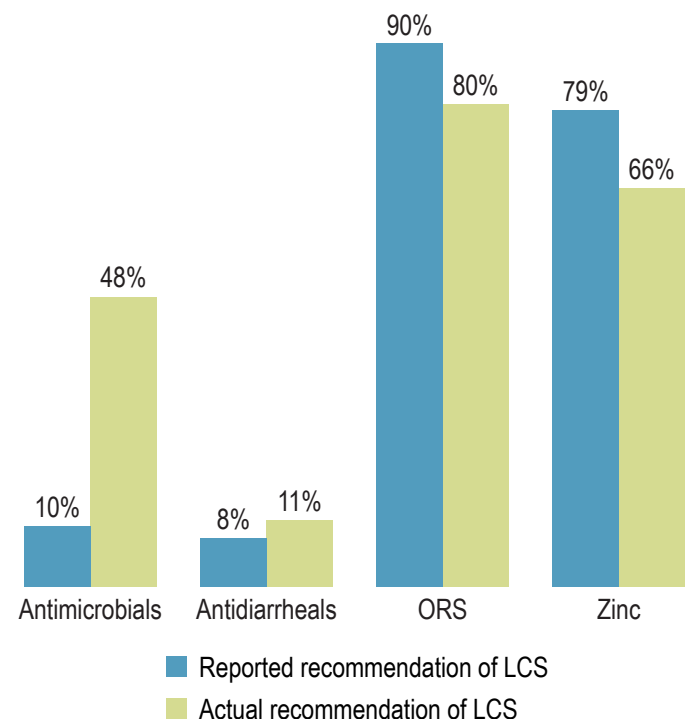
### Providers' self-reported practices deviated sharply from their actual practices, particularly in the provision of antimicrobials.

As shown in Figure 1, across both treatment and control groups, the LCS' reported recommendations adhered more closely to WHO-recommendations than their actual practices. The largest difference was in antimicrobials, which are not recommended for uncomplicated pediatric diarrhea. Roughly one in ten LCS reported recommending antimicrobials for pediatric diarrhea, but in practice, nearly half of the LCS sold antimicrobials to a mystery client.

### Providers' experiences with customer refusals and demands may contribute to the difference between reported and actual practices.

During face-to-face provider interviews, LCS noted that they had experienced customers refusing ORS (25 percent) and zinc (12 percent). LCS also reported that customers' most commonly requested treatment was the antimicrobial Flagyl (metronidazole), though ORS was also frequently requested (see Figure 2 and Figure 3).

Figure 1. Self-reported practices vary from actual behavior

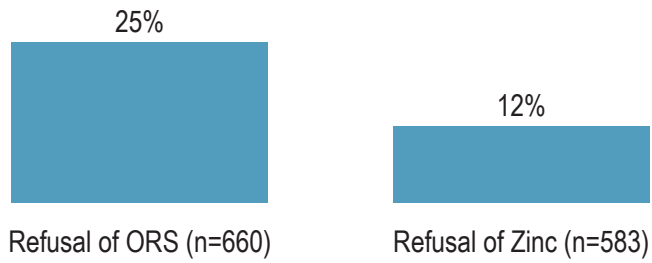


The figure shows differences between self-reported practices (provider survey) compared to actual recommendations (mystery client) of products for childhood diarrhea.

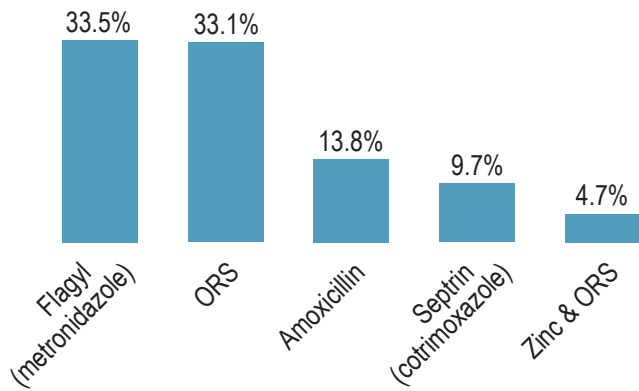
n=699, treatment and control groups combined

<sup>1</sup> The proportion citing antimicrobials as their most recommended product was 11.5 percent in the control group and 5.9 percent in the treatment group, a 48.6 percent decrease. The proportion citing ORS and zinc was 70.7 percent in the control group and 77.4 percent in the treatment group, a 9.3 percent increase.

**Figure 2. Reported incidence of customer refusals of ORS and zinc**



**Figure 3. Top five products most requested by caregivers for pediatric diarrhea**



Minkti Chatterji

## Program Implications

### **The SMS campaign tested in this study increased knowledge and/or retention—a step in the right direction.**

While the SMS intervention tested in this study did not improve the actual behavior of the LCS, it did improve their knowledge of appropriate treatments for pediatric diarrhea. This study tested one model of an SMS intervention, using three messages per week for eight weeks, and it is possible that an SMS intervention could be adjusted in terms of its content, message frequency, or campaign length to yield greater impact on behaviors.<sup>2</sup> If appropriately adapted, an SMS campaign could potentially supplement or replace more expensive “refresher” interventions like follow-up trainings and in-person visits.

### **Researchers focusing on provider behavior should consider examining both self-reported and actual practices.**

Given the differences noted in the LCS’ reported practices when interviewed and their actual practices when responding to a mystery client, researchers may consider using a multi-pronged data collection methodology such as the one used in this study.

### **Regardless of private providers’ knowledge of correct treatment, consumer demands may influence the providers’ actual practices.**

Efforts to promote appropriate treatment in the private sector must recognize the key role of customers’ preferences, and combine provider-focused interventions with consumer-focused demand generation.

## Full Report

Woodman, Benjamin, Minki Chatterji, Willa Friedman,<sup>3</sup> Vicki MacDonald, and Pamela Riley. 2014. *Can Training and SMS Messages Improve Private Provider Treatment of Childhood Diarrhea? Evidence from an Experimental Evaluation in Ghana*. Bethesda, MD: Strengthening Health Outcomes through the Private Sector Project, Abt Associates Inc.

Download this report at [www.shopsproject.org](http://www.shopsproject.org).

This summary is based on research conducted by the SHOPS project. For more information, contact [info@shopsproject.org](mailto:info@shopsproject.org).



Ethical Considerations: This study was approved by the Abt Associates Inc. Institutional Review Board and the Ghana Health Service Ethical Review Committee. Free and informed consent was obtained from all respondents.

<sup>2</sup> A recent study in Kenya demonstrated that one-way SMS messages sent daily to public sector health workers for six months increased adherence to recommended malaria treatment practices by these health workers. See: Zurovac, D., R. K. Sudoi, and W. S. Akhwale. 2011. “The Effect of Mobile Phone Text-Message Reminders on Kenyan Health Workers’ Adherence to Malaria Treatment Guidelines: A Cluster Randomised Trial.” *The Lancet* 378 (9793): 795–803.3

<sup>3</sup> The evaluation team included Dr. Willa Friedman as a third-party researcher from the Center for Global Development to ensure objectivity.

The Strengthening Health Outcomes through the Private Sector (SHOPS) project is a five-year cooperative agreement (No. GPO-A-00-09-00007-00) funded by the U.S. Agency for International Development (USAID). The project focuses on increasing availability, improving quality, and expanding coverage of essential health products and services in family planning and reproductive health, maternal and child health, HIV and AIDS, and other health areas through the private sector. SHOPS is led by Abt Associates, in collaboration with Banyan Global, Jhpiego, Marie Stopes International, Monitor Group, and O’Hanlon Health Consulting. The views expressed in this material do not necessarily reflect the views of USAID or the United States government.

For more information about the SHOPS project, visit: [www.shopsproject.org](http://www.shopsproject.org)



Abt Associates Inc.  
4550 Montgomery Avenue, Suite 800 North  
Bethesda, MD 20814 USA  
Telephone: 301.347.5000 • Fax: 301.913.6019  
[www.abtassociates.com](http://www.abtassociates.com)