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SOCIAL MARKETING ZINC TO IMPROVE DIARRHEA TREATMENT PRACTICES

FINDINGS AND LESSONS LEARNED FROM CAMBODIA

October 2007

This publication was produced for review by the United States Agency for International Development. It was prepared by Malia Boggs, USAID Washington; Dainah Fajardo, WHO Cambodia; Susan Jack, WHO Cambodia; Susan Mitchell, Abt Associates Inc.; and Patricia Paredes, Consultant, for the Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project.

POUZN
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POUZN Research Report No. 3

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Cover photo: Malia Boggs, Caption: Satisfied DTK users and healthy treated child.

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This assessment was made possible through support provided by the U.S. Agency for International Development, Contract No. GPO-1-00-04-00007-00 Task Order Five. The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government.

ABSTRACT

Diarrhea is one of the main causes of childhood morbidity and mortality in low-income settings and Cambodia is no exception. Data from the Cambodia Demographic and Health Survey (CDHS) in 2005 indicate that 20% of children under the age of five had diarrhea in the two weeks preceding the survey, similar to the prevalence found in the 2000 CDHS.

In early 2004, the World Health Organization (WHO) and UNICEF published a Joint Statement recommending the use of a new formulation of oral rehydration salts (ORS) along with therapeutic doses of zinc for the treatment of children under five during diarrhea episodes. The new ORS formulation has a lower level of salt and glucose than the standard ORS, resulting in a lower osmolarity of the solution and thereby reducing stool output and decreasing the likelihood of vomiting and hospital admission for intravenous therapy due to dehydration.

Based on this recommendation, the Cambodian Ministry of Health (MOH) and Population Services International (PSI), an international social marketing nongovernmental organization working in Cambodia, decided to introduce the new low-osmolarity ORS and zinc in the private sector. In March 2006, the MOH and PSI, in coordination with WHO and with financial support from the U.S. Agency for International Development (USAID), launched a demonstration project to introduce a diarrhea treatment kit (DTK), branded as OraselKIT®, in selected districts of two provinces of Cambodia.

This report details the results and lessons learned during an assessment of this pilot program. The assessment was jointly conducted by the USAID-funded Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project implemented by Abt Associates Inc., USAID, and WHO. This assessment was conducted from January 28 to February 9, 2007.

CONTENTS

ACRONYMS

BASICS	Basic Support for Implementing Child Survival
ARC	American Red Cross
CDHS	Cambodia Demographic and Health Survey
CMS	Central Medical Store
CRC	Cambodian Red Cross
CVCG	Community Volunteer Care Group
DTK	Diarrhea Treatment Kit (OraselKIT)
ICH	Integrated Child Health
IEC	Information, education and communication
IMCI	Integrated Management of Childhood Illness
IMR	Infant mortality rate
IPC	Interpersonal communication
MOH	Ministry of Health
NGO	Nongovernmental Organization
OD	Operational District
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
POUZN	Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment Project
PSI	Population Services International
RACHA	Reproductive and Child Health Alliance
RCVL	Red Cross Volunteer Leader
RPM Plus	Rational Pharmaceutical Management Plus Program (Management Sciences for Health)
SQHN	Sun Quality Health Network
U5MR	Under Five (Years of Age) Mortality Rate
USAID	United States Agency for International Development
VHSG	Village Health Support Group
WHO	World Health Organization

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1. INTRODUCTION

1.1 BACKGROUND

Diarrhea is one of the main causes of childhood morbidity and mortality in low-income settings and Cambodia is no exception. Data from the Cambodia Demographic and Health Survey (CDHS) in 2005 indicate that 20% of children under the age of five had diarrhea in the two weeks preceding the survey, similar to the prevalence found in the 2000 CDHS. Although the 2005 CDHS does not report directly on diarrhea-related mortality, 24% of child deaths were associated with diarrhea in the 2000 CDHS.

In early 2004, the World Health Organization (WHO) and UNICEF published a Joint Statement recommending the use of a new formulation of oral rehydration salts (ORS) and the use of therapeutic doses of zinc for the treatment of diarrhea episodes in children under five. The new ORS formulation has a lower level of salt and glucose than the standard ORS, resulting in a lower osmolarity of the solution and thereby reducing stool output and decreasing the likelihood of vomiting and hospital admission for intravenous therapy due to dehydration. Clinical trials have demonstrated that the use of zinc in therapeutic doses reduces the duration of acute and persistent diarrhea by 25% and 29%, respectively; reduces the severity of diarrhea (frequency and stool output); reduces by 40% the treatment failure or death in persistent diarrhea; and greatly diminishes the likelihood of another diarrhea episode and pneumonia for 2-3 months after completing 10-14 days of zinc treatment.

Based on this recommendation, the Cambodian Ministry of Health (MOH) and Population Services International (PSI), an international social marketing nongovernmental organization (NGO) working in Cambodia, decided to introduce the new low-osmolarity ORS and zinc in the private sector. In March 2006, the MOH and PSI, in coordination with WHO and with financial support from the U.S. Agency for International Development (USAID), launched a demonstration project to introduce through the private sector a diarrhea treatment kit (DTK), branded as OraselKIT®, in selected districts of two provinces of Cambodia, Pursat and Siem Reap. The DTK includes two sachets of the new WHO/UNICEF-recommended reduced-osmolarity ORS, one blister pack of 10 tablets of 20-mg dispersible zinc, and an instructional leaflet on the treatment of simple diarrhea for children. The DTK is being distributed through commercial retail outlets and two local partner NGOs, the Reproductive and Child Health Alliance (RACHA), and the American Red Cross/Cambodian Red Cross (ARC/CRC).

This report details the results and lessons learned during a rapid assessment of this pilot program. The assessment was jointly conducted by the USAID-funded Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project implemented by Abt Associates Inc., USAID, and WHO. The assessment was conducted from January 28 to February 9, 2007. The pilot program is ongoing.

1.2 METHODOLOGY

Methods used for this assessment included:

Document review: This included a review of national strategies and policies, existing Demographic and Health Surveys, previous surveys or studies on treatment or health seeking practices for diarrhea case management, DTK sales data, pilot project progress reports, and quarterly and evaluation reports of partners.

Interviews: These were conducted at the central, provincial, and district levels. At the central level, interviews were conducted with the MOH authorities and program managers, the Central Medical Store (CMS) manager, PSI/Cambodia staff, RACHA headquarter staff, UNICEF program officers, the USAID Basic Support for Implementing Child Survival (BASICS) II project technical advisor, a commercial distributor of pharmaceutical products, PATH project directors, visiting staff from the Rational Pharmaceutical Management Plus Project (RPM Plus), and a member of the Pediatric Association of Cambodia. At the provincial level, interviews were conducted with provincial and district officials from Pursat and Siem Reap; private and public sector providers at the referral hospital and health centers; field officers at partner NGOs (RACHA and ARC/CRC); ARC/CRC community volunteers; clerks at retail outlets, pharmacies, and village shops; and caregivers at health facilities, village shops, and a mobile unit show.

Field visits to Siem Reap and Pursat included visits to public health facilities and the referral hospital, observation of refresher training for ARC/CRC volunteers; observation of a mobile video unit show in a village of Kralanh district in Siem Reap province; and visits to retail outlets, village shops, and PSI's partner Sun Quality Health Network (SQHN) providers in both provinces.

Focus group discussions with users and nonusers were conducted according to a focus group discussion guide prepared by the assessment team. RACHA field officers in Siem Reap translated the guide into Khmer and helped to organize and facilitate four focus group sessions; two of the sessions were held in Kralanh District (25 and 19 women), and two were held in a peri-urban area of Siem Reap (14 and 19 women).

1.3 CAMBODIA COUNTRY BACKGROUND

The Kingdom of Cambodia is an agricultural country in Southeast Asia with an estimated population of 13.09 million and an annual growth rate of 1.8%.[1] Encompassing 181,035 square kilometers, the country is divided into 24 provinces. Cambodia's per capita gross domestic product is US$339, making Cambodia one of the poorest and least-developed countries in Asia.[2] The vast majority of Cambodians (85%) live in rural areas, and an estimated 35% of the population lives below the poverty line on less than $1 per day. Agriculture, mainly focused on rice production, is the country's main economic activity but garment factories and tourism are also important sources of revenue.

[1] *National Institute of Statistics, 2004.*
[2] *Cambodia Demographic and Health Survey, 2005.*

Government health services are provided by the MOH, at times with some support from NGOs. Government investment in rebuilding health infrastructure, after the devastation of many years of internal turmoil, started in the early 1990s. Currently the functions of the MOH are being reoriented to a more steering, managerial role, and in some places, contracting agreements with NGOs for service provision have been established. At present, there are more than 100 NGOs partnering with the government to support and/or provide health services to rural and marginalized populations.

The for-profit health sector also plays an important role in the provision of health services in Cambodia. Available data indicate that the majority of the population first seeks care from for-profit providers (not necessarily licensed medical providers) or treats the illness at home.[3] There is a wide range of for-profit private providers offering health services and products in both urban and rural settings. This includes private medical practitioners, pharmacists, nurses, midwives, drug sellers, and traditional practitioners. Unfortunately, the for-profit sector is inadequately regulated, resulting in inconsistent and often poor-quality health products and services. The majority of pharmacies and drug sellers are unlicensed and Cambodia has a serious problem with counterfeit drugs.

Despite widespread poverty and suboptimal access to quality care, Cambodia has achieved a 30% decline in both the infant mortality rate (IMR) and under-five mortality rate (U5MR) in the past five years. The 2005 CDHS indicates that the IMR has decreased to 66 deaths per 1,000 (from 95 deaths per 1,000 in 2000) and that the U5MR is now 83 deaths per 1,000 live births (from 124 in the 2000 CDHS).

For 2005, the CDHS estimated that 20% of children under-five had diarrhea in the two weeks preceding the survey. Among those, 21% were given ORS and, in total, 36% received at least one of the recommended fluids (ORS, and/or home fluids of porridge water, and/or cooked rice with salt and sugar). When adding those who mentioned that they increased fluid intake of any fluid (recommended or not), the figure increases to 58%. Unfortunately use of often-inappropriate treatments such as pills or syrups remains high at 63.1%.

A study on Community Drug Management for Integrated Management of Childhood Illness (IMCI) conducted by the USAID-funded RPM Plus program in 2004 concluded that informal private sector providers such as village shopkeepers and drug sellers were the first source of care for the majority of childhood illness cases. Caregivers reported that antibiotics were recommended and obtained for 42% of diarrhea cases, and 25% of cases were given an injection. Furthermore, 25% of licensed for-profit

A mother with a child who was brought to the public clinic for diarrhea and treated with an IV.

[3] *University Research Co. LLC, May 2004, Demand and Care Seeking for Child Health Services in the Government, NGO & Private Sectors.*

providers and pharmacies recommended treating simple diarrhea with antidiarrheals, a treatment not recommended for children. Respondents from every other type of drug outlet stated that they would recommend antibiotics to treat simple diarrhea, and 41% of public sector providers mentioned they use antibiotics for non-bloody diarrhea. The RPM Plus team also found that it was common for clinicians to provide an IV to patients as one of the first-line treatments for those visiting clinics. Moreover, prior to the introduction of the DTK, caregivers had no ongoing source of ORS in the private sector. There was no consistent commercial supply and therefore ORS in the private sector was primarily "leaked" from the public sector. Thus, an important objective of the introduction of the DTK is to shift providers and caregivers to recommended ORS and zinc treatments for childhood diarrhea.

While low-osmolarity ORS is available in the public sector, many public sector providers are not aware that the formulation has been changed and assume that the product would be unacceptable to clients. Moreover, some public health officials believe that those who visit public health facilities expect more than ORS; therefore, use of intravenous fluids is a common treatment. A doctor in a referral hospital said, regarding a patient: "mothers will not accept Oralyte [the name used for the ORS available in public health facilities] – it does not stop diarrhea, children do not like to drink it, and the mother has walked 10 km to receive something else."

2. DTK PROJECT DESCRIPTION AND PROGRESS TO DATE

PSI began working in Cambodia in 1993 and has successfully socially marketed a number of health products over the past 14 years. PSI received funding from USAID and support from WHO to pilot the social marketing of the first-ever DTK containing 10 tablets of zinc sulfate along with two sachets of a new, improved ORS. This is done through private sector channels in two target provinces of Cambodia, Siem Reap and Pursat. Prior to launching the DTK in March 2006, PSI coordinated with the MOH and partners at all levels, held consultative meetings, and designed and tested campaign messages, pamphlets, product packaging, and an instructional insert.

The target provinces of Siem Reap and Pursat have some of the most dire health conditions in Cambodia, especially for children under five. As noted above, the national U5MR is 83 per 1,000 live births. The rates are higher in the intervention areas: 94 in Siem Reap and 106 in Pursat.[4] According to research conducted by the University Research Co. LLC in May 2003, only 9.3% of children under five in priority Operational Districts (ODs) in Pursat and 12.2% in priority ODs in Siem Reap who had diarrhea during the two weeks preceding their survey received oral rehydration therapy (ORT=ORS and/or home-made sugar-salt solution).[5] Therefore, the selection of these two provinces was appropriate for testing the viability of increasing use of ORS and introducing zinc through the DTK.

2.1 GOAL AND OBJECTIVES

The goal of the pilot project is to improve child health in Cambodia by reducing incidence and severity of childhood diarrhea in two provinces with high diarrhea incidence and low ORT use.

The project's objectives include:

- Introduce DTK in Siem Reap and Pursat provinces (target population: 127,570 children under five);
- Increase access to DTK;
- Improve knowledge, attitudes and practices about appropriate home management of childhood diarrhea among caregivers of children under five in target areas.

[4] *Cambodia Demographic and Health Survey, 2005.*
[5] *University Research Co. LLC, 2003, Health Facility Assessment in Seven Provinces of Cambodia, Phnom Penh.*

2.2 PROJECT STRATEGY

For the DTK program, PSI/Cambodia's program approach is to mobilize private sector distribution networks to make high-quality ORS and zinc products available to low-income people at subsidized prices. Products are sold, rather than given away, at a price the target audience can afford so that consumers, even low-income consumers, will value and use them. Behavior change communication implemented through mass media and interpersonal communication (IPC) is designed to encourage healthy behaviors among individuals, thus leading to long-term health impact. In addition to distributing the product through traditional commercial retail outlets such as pharmacies and drug shops, PSI/Cambodia partners with NGOs implementing child survival programs in rural areas to improve access and reach those most in need. Finally, the strategy involves including key stakeholders WHO and the public sector at the central and local levels in program design and implementation.

2.3 PROJECT ELEMENTS

The DTK program has eight project elements as discussed below:

2.3.1 PARTNERSHIP WITH THE PUBLIC SECTOR

The public sector at the central, provincial, and district levels are key partners in implementing the DTK program. At the central level, the project has support from MOH officials at the highest level including the Secretary of State for Health, who is responsible for Maternal and Child Health, the Director of IMCI, and the Deputy Director of the CMS, as well as Directors of the two Provincial Health Departments. Provincial- and district-level staff are involved in all the major aspects of the program. This has included reviewing the training curriculum and participating in the training sessions, reviewing and approving all communications messages, reviewing and endorsing the product components including package design, and presiding over launch events. Through its partnership with RACHA, MOH staff at the OD level are involved in product sales and distribution and monitoring the performance of village shops. This public-private partnership allows the government to better understand and monitor the activities of village shopkeepers (who are also distributing other government-supplied products such as contraceptives) and to be active participants in changing diarrhea treatment behaviors.

2.3.2 PRODUCT DEVELOPMENT

The package contents, design, logo, and insert were developed by PSI/Cambodia based on information collected through formative research with target consumers. In addition, WHO (Cambodia and Geneva) staff were involved in reviewing key messages, the product insert, the package, and pamphlets. Discussions with key stakeholders and those involved in best practices were vital for product development. With partner collaboration, a detailed low-literacy insert was developed containing illustrated instructions for product use, educational messages regarding diarrhea home management and

Orasel Kit Package, courtesy of PSI

prevention, and referral advice if danger signs appear. The formative research conducted on packaging found that consumers wanted the two products (ORS and zinc) packaged and sold together, and were concerned that if the package were not well sealed, vendors would break it up into components and sell them individually. Therefore, a seal was placed on each kit.

2.3.3 PARTNERSHIPS WITH LOCAL NGOS

To improve rural access and to strengthen IPC efforts, PSI identified NGO partner organizations working in the area of child survival that were interested in partnering with the project and had programs reaching rural communities. No funding has been provided to any of the partner NGOs that are distributing the DTK. A memorandum of understanding outlining each partner's roles and responsibilities was agreed upon and signed. In each case, PSI sells the product to the NGO partner at a subsidized cost and each partner uses different mark-ups according to its own project objectives, but the price to the user is the same. Leaflets, promotional materials, copies of marketing materials (video drama, karaoke, etc.), along with assistance in training, were provided by PSI to each of the partners.

One of the selected NGOs was RACHA, a local NGO created in 1996/97 that works primarily on IMCI through village health programs and on child survival (food fortification, vitamin A distribution), and provides support to the MOH with capacity building in logistics, health information systems, and health center performance contracts. RACHA implements health promotion activities through traditional birth attendants, nuns, and wat grannies, as well as a Comedy for Health group that teaches the audience how to prepare ORS, how to administer home care for diarrhea, and when to refer a child to the health facility.

RACHA has a unique village shopkeeper network through which PSI/Cambodia products are able to penetrate hard-to-reach rural areas. To select shopkeepers for its program, RACHA looks for the most popular vendors in a village and selects one to three of them (depending on the size of the village) for training in the use of one product. When the shopkeeper shows that s/he understands the promotion of the product, RACHA repeats the process with another product.

RACHA agreed to distribute the OraselKIT® through its network of 500 village shops in Siem Reap and 379 shops in Pursat. To do so, RACHA chose to use the public health system as the main vehicle to distribute product to the village shop network. This decision was made to ensure that the public sector recognizes that diarrhea is a public health problem, to create a link between the health centers and the village shopkeepers, to promote ownership of the activities by health center personnel, and to provide financial incentives for public sector workers.

PSI provided training to RACHA core trainers, as well as training materials, and information, education and communication (IEC) materials (banners, pamphlets with graphic demonstrations on the use of the product) to be used by shop owners for promotion and education. RACHA also trained provincial- and district-level public health staff, health center staff, and health center volunteers (members of the village health support group), and then utilized the staff of the

health center to directly train village shopkeepers and monitor the program through bimonthly follow-up visits.

The second partner NGO, the ARC/CRC implements a USAID-supported Integrated Child Health (ICH) Project in 254 villages of the Angkor Chum district in Siem Reap. Diarrhea prevention and treatment are key elements of its program. The project uses a community-based care group model for organizing and supporting the Red Cross volunteers (called the Community Volunteer Care Group, or CVCG). Specifically, through its network of nearly 2,000 CVCGs, the project promotes improved health practices through home visits and edutainment[6] sessions.

The DTK component was launched in April 2006 in 20 villages of the ICH Project. The ARC/CRC established DTK committees in each of the villages, composed of leaders of the community and members of the Village Health Support Group (VHSG) with whom the health center personnel and the ARC/CRC coordinates project activities, as well as one volunteer selected from among the several volunteers in each village responsible for sales of the DTKs and safeguarding income from sales.

In August 2006, only three months after the DTK introduction, an external team conducted a evaluation of the ICH Project.[7] Seeing the positive results of the OraselKIT® in increased ORS use and reduced pill usage for diarrhea (see table below), the evaluation team recommended that the introduction of OraselKIT® be expanded to 20 more villages. At the time of the assessment, 40 villages of the 240 in the ICH project were receiving the OraselKIT®.

TABLE 1. COMPARISON OF USE IN DTK VILLAGES VERSUS NON-DTK VILLAGES

	Baseline	Follow-up	
	2005	**DTK**	**Non-DTK**
ORS	33%	72%	56%
Pills	58.7%	36%	40%

Source: Based on data available from ARC/CRC evaluation reports
Note: Non-DTK villages received only community education while DTK communities could purchase the DTK product.

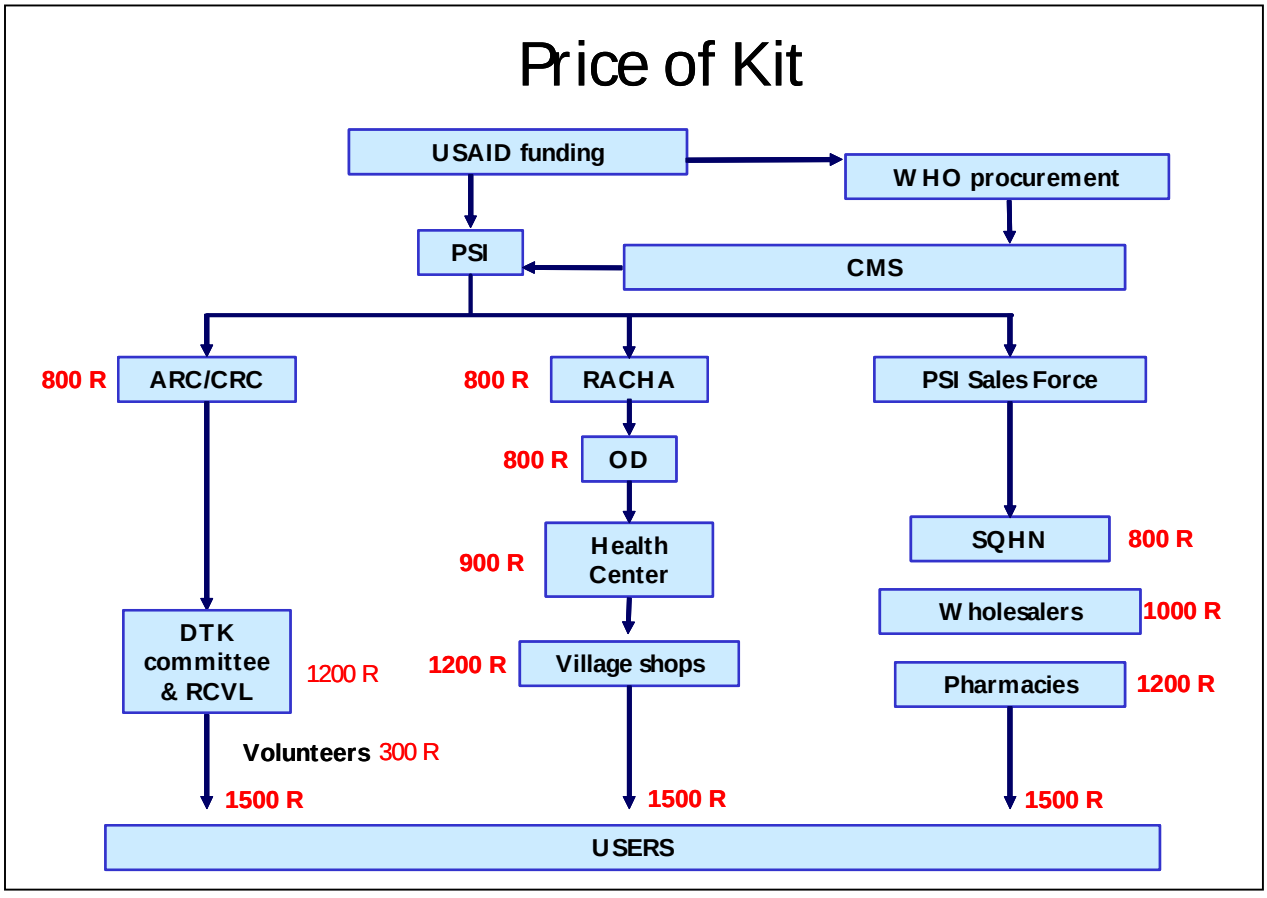
2.3.4 PRICING

PSI sells the DTKs at 800 riel to NGO partners and its network of private providers, and 1,000 riel to the commercial sector retailers. These prices are less than the cost of goods, which is 1500 riel ($0.375) including packaging and insert.[8] The cost of goods would likely be reduced with scale-up due to economies of scale. The product sells to consumers for 1,500 riel. Figure 1 illustrates how each NGO partner sets margins to encourage sales of the DTK.

[6] Education + Entertainment
[7] *American Red Cross/Cambodian Red Cross, October 2006, Integrated Child Health Project: Activity and Evaluation Report III.*
[8] US$1.00 = 4,000 riel

PSI determined that this price would be affordable to the target population based on focus group discussions and price comparisons. Price comparison took into account that different types of ORS were selling in the market for between 300 and 500 riel and that unnecessary antibiotics (commonly sold together with ORS) were selling in the 1,000–1,500 riel price range. Therefore, the combination of two sachets of ORS with one blister of antibiotics would have cost a consumer 1,600–2,500 riel. As a side benefit of using zinc to discourage the use of unnecessary antibiotics, a comparison was made with the antibiotics usually administered by caregivers during bouts of diarrhea. No comparison was possible with other zinc products as there are no zinc formulations in the required dosage and form available in the Cambodian market. Thus, the price of the OraselKIT® was considered comparable to the usual products administered by caregivers (ORS and antibiotics) for a significantly more effective treatment. During the current assessment, discussions with focus group participants and high demand for the product, even in rural communities, indicated that the consumer considered the price both reasonable and affordable.

FIGURE 1: PRICE OF DTKS, BY DISTRIBUTION METHOD



Note: RCVL=Red Cross volunteer leader

2.3.5 DISTRIBUTION

In the pilot areas, priority for distribution is through the NGO partners as they are most likely to reach a rural target. Of particular importance is RACHA's linkage with village shops. Village

shops are small shops or kiosks located in almost every village in Cambodia. They typically sell a small number of health products, including antibiotics, aspirin, and antidiarrheals and, given their location within the community, are often an important first source of treatment. In addition to distribution through village shopkeepers and ARC/CRC community volunteers, PSI sells the product through its traditional commercial distribution network including wholesalers, pharmacies, and drug shops, and other health care providers as is illustrated in Figure 1.

2.3.6 BEHAVIOR CHANGE COMMUNICATION

The DTK project uses a range of communication vehicles to disseminate its messages. These include mass media: television, cinema, a radio spot and docudrama, billboards, point-of-sale materials including stickers, posters and leaflets; IPC through its NGO partners; and a mobile video unit to support its own "info days."

The television and radio advertising focus on communicating five key messages:

- The OraselKIT® is an effective treatment for uncomplicated diarrhea in children.
- The kit contains two sachets of ORS and 10 tablets of zinc.
- Mix the ORS with boiled water; give ORS several times daily.
- Mix one zinc tablet in a spoon with boiled water or breast milk; give zinc for the full 10 days.
- ORS replaces liquids lost in diarrhea, and zinc improves recovery and strength and helps prevent diarrhea for 2-3 months when used for 10 days.

The billboard and point-of-sale materials (other than the leaflet) focus primarily on promoting the brand and increasing awareness of where the product is available. A docudrama movie covers a range of hygiene and sanitation issues including the main causes of diarrhea (unprotected food, use of unsafe drinking water, unclean surroundings, etc.) and appropriate prevention behaviors (protecting food and water, boiling water, hand washing, keeping surroundings clean, etc.), and appropriate treatment of diarrhea, including use of the DTKs and increased fluids and feeding. The docudrama seems to be a good way of deepening and reinforcing key messages.

Billboard encouraging use of Orasel Kit

2.3.7 TRAINING

PSI implemented an extensive training program: a training of trainers (TOT) program for NGO partners and Provincial Health Authority staff, and then training of the SQHN providers, doctors, midwives, and nurses. Following the TOT, RACHA directly trained public health center staff, village shops, VHSGs, and nuns. ARC/CRS trained its volunteer health workers and the VHSG. A total of 2,659 providers were trained (909 in Siem Reap and 1,750 in Pursat). The training covered basic knowledge of diarrheal disease, prevention, and appropriate treatment. The training also covered the DTK kit: its content, its benefits, when it is appropriate to use, how to make the ORS solution, how to dissolve zinc, and how to use the products and for how long.

2.3.8 MONITORING AND EVALUATION

The project relies on a range of sources for monitoring and evaluation as its budget is limited to covering program implementation expenses. The agreements with ARC/CRC and RACHA call for the organizations to report results and to include the DTK in any household surveys they conduct. ARC/CRC was the only partner to actually implement a household survey because it was part of its mid-term evaluation for the Child Survival and Health Grants Program. The results of this survey (and type of indicators collected, particularly actual use of ORS and drugs) were invaluable in helping to monitor progress and evaluate the program.

3. LESSONS LEARNED

The introduction of zinc, together with ORS for the treatment of diarrhea, is a new intervention with the promise of significantly reducing the impact of diarrhea among children. As programs begin implementation and gain insight into effective strategies to increase acceptance and use of these important products, it will be critical to document and share strategies and lessons learned. While the PSI program is only a pilot, some important lessons are emerging from the project. Following are the main lessons that the evaluators identified.

LESSON 1: PACKAGING ORS AND ZINC TOGETHER IS AN EFFECTIVE MEANS OF MARKETING THESE PRODUCTS AND ENCOURAGING THEIR COMBINED USE

ORS use in Cambodia is relatively low and consumers have a negative perception of the ORS that has been available. However, consumers are already open to treatment with a pill or syrup and were therefore open to trying the zinc treatment. Therefore, by combining the two products and offering a new improved ORS in the DTK, the project succeeded in ensuring that caregivers did not use zinc alone and encouraged trial of the new ORS.

With the change in ORS formulation, the experience from prior research and this pilot introduction in Cambodia demonstrates the acceptability of the new formulation of ORS from the beginning of the diarrhea episode. This seems to be the rule and not the exception. Caregivers are even eager to continue administering the formulation after the first two sachets have been consumed. The result anticipated by caregivers, that is, a decrease in stool output or full stop of diarrhea, is occurring earlier thanks to the new formulation's lower osmolarity and the administration of zinc. Consequently, caregivers are more open to accepting the combined treatment.

The experience in Cambodia shows that the renewed effort in promotion of both ORS and zinc has brought back ORS in a new light and is giving it more recognition among practitioners and caregivers, so as to motivate private sector practitioners to have it available in the new formulation.

LESSON 2: DISTRIBUTING THE PRODUCT THROUGH VILLAGE SHOPS AND LOCAL NGO NETWORKS, LOCATED IN RURAL AND PERI-URBAN COMMUNITIES, IS AN EFFECTIVE MEANS OF INCREASING ACCESS AND USE IN RURAL COMMUNITIES

Village shops in particular have proved to be important in improving caregiver access to appropriate treatment. Village shopkeepers are also more easily persuaded to recommend the DTK than are clinicians or pharmacists, because they do not have a large variety of alternatives

to recommend (i.e., they do not offer treatment with intravenous fluids and sell only a limited number of other treatments).

LESSON 3: AN ONGOING CHALLENGE IS TO CHANGE THE BEHAVIOR OF CLINICIANS, PHARMACISTS, AND DRUG SELLERS WHO CONTINUE TO SELL INAPPROPRIATE TREATMENTS

Private practitioners' first treatment choice is still intravenous fluid, followed by antibiotics, and there is a tendency to sell unnecessary drugs with the DTK. Reasons to do so vary from the perception that caregivers who come to health facilities (public or private) want to receive sometimes more than "just" ORS, to uncertainty on the appropriateness of recommending ORS, without some other medicine, to the desire to increase profits by selling more expensive treatments. Practitioners (private and public) maintain their perception that children with mild dehydration will not drink the standard ORS (usually called *Oralyte*) because of the salty taste, and they have observed that it increases stool output and makes mothers more anxious about diarrhea "not stopping." More effort needs to be made to discourage this type of practice and more incentives devised to encourage the sole use of the DTK or ORS alone. Continued training of providers along with reinforcement of key messages on the appropriate treatment of diarrhea among consumers, particularly for urban and peri-urban areas, is needed. Messages for urban and peri-urban consumers and MOH and pharmacy staff should reinforce that products other than ORS and zinc are not needed for simple diarrhea. Emphasis on avoiding unnecessary use of drugs for simple diarrhea needs to be addressed by MOH officials, regulatory agencies, and communication campaigns to improve these practices.

LESSON 4: WITHOUT CONSUMER EDUCATION AND REGULATORY ENFORCEMENT THE AVAILABILITY OF DANGEROUS ANTI-DIARRHEA PRODUCTS IN THE MARKETPLACE CREATES A HIGH-RISK SITUATION

The for-profit sector is inadequately regulated, resulting in inconsistent and often poor-quality health products and services. The majority of pharmacies and drug sellers are unlicensed, and Cambodia has a serious problem with counterfeit drugs. Effervescent sachets of probiotics and a new sachet of loperamide for infants produced by a local company were also available. The loperamide package had a picture of an infant to promote the product for that age group. However, loperamide for infants was banned from the international market in the early 1990s due to its harmful effects (depression of the central nervous system and paralytic ileum). This points to the need for better drug regulatory activity and improved consumer education. Given the extent of use of unnecessary drugs, messages for consumers and MOH and pharmacy staff should reinforce that products other than *OraselKIT*® or other ORS and zinc combinations, are not needed for simple diarrhea (unless it is the ORS alone).

Loperamide for infants is available in private pharmacies despite the fact that it was banned from international markets in the early 1990s.

LESSON 5: MASS MEDIA COMBINED WITH THE IPC OF PARTNERS' VOLUNTEERS, VILLAGE SHOPKEEPERS, AND OTHERS HAVE RESULTED IN HIGH AWARENESS, IMPROVED KNOWLEDGE, AND USE OF THE DTK

Messages and communication materials to promote the use of the DTK were widely tested and received professional input at national and global levels. Most frequently cited communication channels from which people learn about DTK are the TV spot, radio, village shopkeepers, and NGO volunteers and comedy groups. Partner NGOs developed IEC materials (banners, pamphlets with graphic demonstrations on the use of the product) that are used by shop owners for promotion and education, and by trained provincial- and district-level public health staff, health center volunteers (members of the VHSG), village shopkeepers, and community-based care groups in their demonstrations, health days, and health education sessions. Improved health practices are also promoted through home visits and edutainment sessions.

LESSON 6: A STRONG MONITORING AND EVALUATION SYSTEM, COUPLED WITH TIMELY QUANTITATIVE RESEARCH, IS NEEDED TO FULLY ASSESS THE EFFECTIVENESS OF ANY PROGRAM THAT SOCIALLY MARKETS A NEW HEALTH PRODUCT

Ongoing monitoring of program progress through implementation of household surveys that actually measure the degree of DTK use, adherence to the recommended length of zinc use, whether zinc is effective in replacing unnecessary medicines, and whether caregivers continue providing recommended home fluids after the two packages of ORS have been used is advisable prior to scaling up a pilot program to the national level. This quantitative data will also be helpful in informing the global community of the program results and encouraging other countries to move forward in adoption of the policy and program implementation.

4. CONCLUSION

The primarily qualitative information collected during the field visit and the review of documentation and reports from partners, including a small quantitative household survey from the ARC/CRC mid-term evaluation, suggests that the program is effective at increasing the use of ORS and zinc, a proven treatment for childhood diarrhea, particularly among the targeted low-income, rural, and semi-urban populations. Actual sales greatly exceeded the total projected sales for the year requiring that PSI ration the product to its wholesalers, giving priority to the NGO partners. From March to December 2006, sales reached 33,000 – double what was projected – causing product stock out; actual demand was higher when one takes into account the rationing that was required.

Involving all levels of the system, building consensus for public health goals among MOH and NGO partners, and involving central and local authorities every step of the way has engendered wide support for the program. The selection of pilot sites and partners as well as channels to distribute the product has been appropriate. The project has reaped the benefits of PSI's long-term experience designing and implementing IEC campaigns that support all partners' activities.

The product price seems to be affordable and the co-packaging of zinc with ORS seems to be preferred given the minimal availability of high-quality ORS in the market and to avoid use of zinc as a stand-alone product. In addition, the emphasis on ORS and ORT in all communication messages, rather than on zinc alone, seems to have increased the understanding of the benefits of and use of ORS. IPC, combined with mass media, was critical to the behavior change success. Partnering with NGOs working at the community level proved effective in IPC message efforts.

In sum, through a well-conceived and research-based product design and marketing strategy, partnerships with NGOs with reach into rural communities, and the involvement of the MOH at all levels from inception throughout implementation, the project has been able to achieve success in a very short timeframe. As the program scales up, it will be important to utilize the strategies and lessons from the pilot intervention, and over time to reassess whether they are as effective in scale-up as they currently are in the implementation of the pilot.