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# Assessment of Pilot Zinc Introduction in Cambodia

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Authors:

Malia Boggs (USAID Washington)  
Dainah Fajardo (WHO Cambodia)  
Susan Jack (WHO Cambodia)  
Susan Mitchell (Abt Associates)  
Patricia Paredes (Consulting for Global Development & Health)

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## Acronyms

ADB	Asian Development Bank
BASICS	Basic Support for Implementing Child Survival
ARC	American Red Cross
CDHS	Cambodia Demographic and Health Survey
CME	Continuing Medical Education program
CMS	Central Medical Store
CPA	Complementary Package of Activities
CRC	Cambodian Red Cross
CSMC	Child Survival Management Committee
CVCG	Community Volunteer Care Group
DTK	Diarrhea Treatment Kit (Orasel kit)
ICH	Integrated Child Health
IEC	Information, Education and Communication
IMCI	Integrated Management of Childhood Illness
IMR	Infant mortality rate
IPC	Interpersonal communication
IRD	International Relief and Development
MOH	Ministry of Health
MPA	Minimum Package of Activities
MVU	Mobile Video Unit (PSI)
NGOs	Non-governmental Organizations
NMCHC	National Center of Maternal and Child Health
OD	Operational District
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
PAC	Pediatric Association of Cambodia
PHD	Provincial Health Directorate
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 Sun Quality Health Network
SQHN	Training of Trainers
TOT	
U5MR	Under five years of age mortality rate
UHN	United Health Network
URC	University Research Co. LLC
VHSG	Village Health Support Group
VHV	Village Health Volunteer
WB	World Bank
WHO	World Health Organization

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# I. Introduction

## 1. Background

Diarrhea continues to be one of the main causes of childhood morbidity in low-income settings and Cambodia is no exception. Data from the Demographic Health Survey (CDHS) indicate that diarrhea continues to be one of the leading cause of mortality in children under five in Cambodia. 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) that has a low level of salt and glucose, resulting in lower osmolality of the solution and therefore reducing stool output, and therapeutic doses of zinc for the treatment of children under five during diarrhea episodes.<sup>1</sup> Random control trials demonstrated that this regimen reduced the duration of acute and persistent diarrhea by 25% and 29%, respectively; reduced the severity of diarrhea (frequency and output of stools); reduced by 40% treatment failure or death in persistent diarrhea, and greatly improved the resistance to diarrhea and pneumonia for 2-3 months after supplementation.

In March 2006, Population Services International (PSI), an international social marketing non-governmental organization (NGO) working in Cambodia, in coordination with the Cambodian Ministry of Health (MOH) and with financial support from the U.S. Agency for International Development (USAID), UNICEF, and WHO, launched a demonstration project to market the world's first 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-osmolality ORS, one blister pack of 10 tablets of 20-mg dispersible zinc, and an instructional leaflet for the treatment of simple diarrhea among 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 of 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, USAID, and WHO. The assessment was conducted from January 28 to February 9, 2007 in Phnom Penh, Siem Reap, and Pursat, Cambodia. The schedule of activities while in country is available in Annex 2.

## 2. Assessment Objectives

The assessment sought to determine:

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<sup>1</sup> Details on the scientific bases for the use of the new low-osmolality ORS and zinc can be found in Annex 1.

- Current policies for diarrheal disease case management, and the involvement of the public sector in the current introduction efforts
- The effectiveness of the private sector introduction of the *OraSelKIT*® diarrhea treatment kit
- The feasibility of future public sector distribution of zinc and low-osmolarity ORS through public health facilities
- The feasibility for continuation/expansion of the distribution of both products in both sectors

### 3. Methodology

Methods used for this assessment included:

**Document review:** This included a review of national strategies or policies, existing DHS surveys, 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 both central and provincial levels. A list of individuals contacted in country is presented in Annex 3.

At the central level, interviews were conducted with the following:

- MOH authorities and program managers,
- Central Medical Store (CMS) personnel,
- PSI/Cambodia staff,
- RACHA headquarter staff,
- UNICEF program officers,
- USAID Basic Support for Implementing Child Survival (BASICS) II project technical advisor,
- A commercial distributor of pharmaceutical products,
- PATH
- Rational Pharmaceutical Management Plus Project (RPM Plus),
- Pediatric Association of Cambodia (PAC)

At the provincial level, interviews were conducted with:

- Provincial and district officials
- Private and public sector providers at the referral hospital and health centers
- Managers at partner NGOs (RACHA and ARC/CRC)
- ARC/CRC community volunteers

**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, and observation of a mobile video unit (MVU) show in a village of Kralanh district in Siem Reap province
- Visits to retail outlets, village shops, and Sun Quality Health Network providers in both provinces
- Focus group discussions (FGD) with users and nonusers. The team prepared a FGD guide that was shared with and reviewed by WHO consultants (see Annex 4). 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). Notes from the FGD can be found in Annexes 5 and 6.

Findings were discussed with PSI and RACHA staff for clarification and feedback. Before leaving the country, the assessment team debriefed the USAID/Cambodia staff and the WHO representative on the main findings of the assessment.

## **II. Country Background**

The Kingdom of Cambodia is an agricultural country in Southeast Asia with an estimated population of 13.09 million (85% rural) and an annual growth rate of 1.8%.<sup>2</sup> Spanning more than 181,035 kilometers, the country is divided into 24 provinces. These provinces are further subdivided into 76 operational districts which contain a total of 67 referral hospitals and 974 health centers.

Cambodia's per capita gross domestic product is US\$339 making Cambodia one of the poorest and least developed countries in Asia.<sup>3</sup> The vast majority of Cambodians 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 the tourism sector are also important sources of revenue.

### **1. The Health System**

After the destruction of government infrastructure during the years of internal turmoil, the Royal Government of Cambodia in the early 1990s, started rebuilding health facilities and reorganizing functions to provide health care. Government health services are provided in Cambodia by the MOH, often in conjunction with NGOs.

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<sup>2</sup> National Institute of Statistics, 2004

<sup>3</sup> Cambodia Demographic and Health Survey, 2005

There are, however, available data to indicate that the majority of the population seeks care from private sector providers or treats the illness at home.<sup>4</sup> The number of private providers is rapidly growing but government regulation is still poorly enforced. A study in 2001<sup>5</sup> showed that village drug sellers were the largest group of private providers.

In 2000,<sup>6</sup> the Cambodia Demographic Health Survey (CDHS) indicated that 52% of diarrhea cases were treated at home, 25% sought treatment in pharmacies or village shops, while 16% sought care from a private provider.

For health care treatment in general the 2005 CDHS reports that for any illness or injury the private sector was utilized more frequently for first treatment (48%) than the public (21.6%) or non-medical sectors (20.8%). Within the private sector, the majority of respondents in urban areas said that they sought first treatment from private pharmacies; in rural areas, most residents sought first treatment from a trained health worker or nurse in their private practice.

Cambodia has been making progress in providing health care to its citizens. According to the MOH Health Sector Strategic Plan 2003-2007,<sup>7</sup> the bases for implementing sector-wide management through a common vision and effective partnerships have been put in place. This includes the provision of a basic package of health services with involvement of the community, and a specialized package for hospital care. This Health Coverage Plan was developed by the MOH and WHO in 1996 and was aimed to improve coverage by creating a network of health facilities that would implement a package of activities. Provincial health departments administer operational districts (OD) within the public health system. Each OD has a number of health centers that deliver the Minimum Package of Activities (MPA) and one referral hospital that delivers the Complementary Package of Activities (CPA).

In 1996, a regulation was passed on opening, closing, and relocating pharmacies. The types of legally operating medicine outlets include pharmacies, and depots A and B, as well as shops for traditional medicines. Depot A is allowed to carry 60 different medicines approved by the Essential Drugs Bureau. In Depot B, only 20 different medicines are approved for sale. However, it is common for these depots to carry more than the number approved by law.<sup>8</sup>

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<sup>4</sup> University Research Co. LLC, May 2004, Demand and Care Seeking for Child Health Services in the Government, NGO & Private Sectors.

<sup>5</sup> PATH 2002, Assessment of Official Private Providers and Delivery of Health Care Services to Children under Five. Phnom Penh.

<sup>6</sup> Similar data for 2005 will be available once the 2005 data set is released, and the data can be analyzed for this purpose.

<sup>7</sup> Kingdom of Cambodia, Ministry of Health, Health Sector Strategic Plan, 2003-2007

<sup>8</sup> Lynders, M. 2006 Community Drug Management for Childhood Illness. Cambodia Assessment, December 2004. Submitted to the US Agency for International Development by the Rational Pharmaceutical Plus Program, Arlington, VA: Management Sciences for Health.

Along with organizational reform, the MOH has put financial reforms in place. Since 1996 some measures have been taken to levy official charges for services to prevent unofficial payments by the population for services. Self-regulatory measures and performance-based contract management within facility teams are expected to control/reduce unofficial payments. Community linkages through health center management committees and village health support groups (VHSG), formerly called feedback committees, are expected to contribute to regulating prices and promoting health facilities and services.

There are attempts to decentralize and de-concentrate financial, planning and administrative functions within the health sector. With the support of several bilateral donors and financial institutions such as the Asian Development Bank (ADB) and the World Bank, the government has already started a process of public and private partnerships to support the MPA and the CPA. These institutions and other donors started financing recurring cost of health service delivery in the mid-1990s, mainly through NGO-assisted projects. Some of the donors are currently supporting contracting in (within institutions of the public sector) and contracting out (to other providers) for the delivery of health care through performance-based contracts. In some cases, this implies an increase in the salary of MOH personnel for outreach activities.

## **2. Health Situation**

Despite widespread poverty, Cambodia has achieved a 30% decline in both infant mortality rate (IMR) and under-five mortality (U5MR) in the past five years. The 2000 CDHS revealed that Cambodia had the highest IMR and U5MR in East Asia, with 95 and 124 deaths per 1,000 live births, respectively. In comparison, the 2005 CDHS indicates the two rates have improved respectively to 66 deaths and 83 deaths per 1,000 live births. Four-fifths of these deaths occur during the first year of life. Pneumonia and other respiratory tract infections, diarrhea with dehydration, malaria, dengue hemorrhagic fever, malnutrition, and neonatal disorders are leading causes of illness and death among Cambodian children.

Loss of fluids and dehydration resulting from diarrhea are significant causes of morbidity and mortality among young children. In 2000, an estimated 24% of under-five deaths were attributed to diarrheal disease. According to the 2000 CDHS, 19% of children under-five had diarrhea in the two weeks preceding the survey. Only 22% of these children were taken to a public health provider and about 48% of the children with diarrhea were treated with some form of oral rehydration therapy (ORT). The definition of ORT used for the CDHS 2000 was the use of ORS (18%), and/or recommended home fluids (3%), and/or rice water (40%). Other treatments of diarrhea included pills or syrup (57%), injections (7%), and other home remedies (9%).

In comparison, the 2005 CDHS report shows that diarrhea prevalence in the two weeks preceding the survey did not vary much (20% of children under-five) with 3% having bloody diarrhea. Approximately 37% of children with diarrhea were taken to a health provider, indicating an increase in health seeking patterns from 2000. Twenty-one percent of children with diarrhea were given ORS not showing much increase from 2000 and, in total, 36% received any recommended fluid (ORS, and/or home fluids of porridge water, and/or cooked rice with salt and sugar), a reduction from 2000 when provision of any of these fluids reached 48%. The percentage of children who were provided ORT or increased fluids was 58.4 in 2005. Eighteen percent of the cases did not receive any treatment. Children living in Siem Reap Province were least likely to receive ORT or increased fluids.

Important information from the two surveys includes the high use of pills and syrups. The use of medicines appears to have increased (from 56.5% in 2000 to 63% in 2005). This treatment is unnecessary given the small proportion of cases of bloody diarrhea (3% in CDHS 2005).

In December 2004, the USAID-funded RPM Plus Program concluded in its study on Community Drug Management for Integrated Management of Childhood Illness (IMCI) that informal private sector providers such as village shopkeepers and drug sellers were the first source of care for the majority of consumers. Forty-two percent of caregivers were provided antibiotics for diarrhea and 25% reported that the child had been given an injection. Furthermore, 25% of licensed for-profit providers and pharmacies recommended treating simple diarrhea with antidiarrheals. Respondents from every other type of drug outlet stated that they would recommend antibiotics to treat simple diarrhea, and 41% of public providers mentioned antibiotics for non-bloody diarrhea. The RPM Plus report recommended the integration of messages promoting the use and explaining the preparation of ORS among health center staff and NGOs.

### **3. Current Policies for Diarrhea Case Management**

The Health Sector Strategy Plan gives priority to decreasing post-neonatal mortality and the morbidity and mortality from diarrheal diseases, acute respiratory infections, vaccine-preventable diseases, dengue, and malaria. Although the MOH formally adopted IMCI in April 1998, implementation did not begin until 2000. By 2006 personnel at 41% of health centers had received IMCI training.

Recognizing the importance of behavioral changes to improve household health practices of caregivers and use of ORT, Professor Koum Kanal of the National Center of Maternal and Child Health, emphasized in a presentation at the Child Survival Partnership Workshop in December 2004, the need for a two-pronged approach through public and private sector channels to increase ORT during diarrhea. As a result, PSI, MOH authorities responsible for IMCI, WHO in Cambodia, RACHA, and other partners

worked in concert to develop and implement the pilot project that is the object of this assessment.

Currently, there is a Child Survival Management Committee chaired by Professor Sann Chan Soeung from the MOH/Expanded Programme on Immunization with members from WHO, UNICEF, USAID, as well as national program managers. Its role is to coordinate the roll-out of the Cambodia Child Survival Strategy throughout Cambodia in public health facilities and supporting partner activities. Membership on this committee includes the six national programs reporting on Cambodia Child Survival Scorecard Indicators.

The Cambodia Child Survival Strategy outlines an approach to reducing child mortality in Cambodia and achieving Cambodia's Millennium Development Goal (MDG) 4, which aims to reduce U5MR to 65 per 1,000 live births by 2015.<sup>9</sup> The strategy aims to achieve universal coverage of a limited package of essential evidence-based, cost-effective interventions that have an impact on child mortality. Most Cambodian households have low income and thus striving for universal coverage of child survival interventions will reduce inequities. In contrast, provision of a comprehensive range of expensive interventions to only the few members of the population who can afford them will not have a significant impact on child mortality and only lead to greater inequities. Therefore, the aim of the Cambodia Child Survival Strategy is "few for all rather than more for few."

At the MDG 4 consultation in 2004 and subsequent consensus building meetings with the MOH and partners, it was agreed to focus on universal coverage of high-impact child survival interventions summarized in the scorecard with clear targets for 2007. Table 1 shows the scorecard interventions, existing coverage of interventions from 2000 to 2005, targets for 2007 and 2010, and from which can be calculated the gap to be filled to attain universal coverage.

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<sup>9</sup> Cambodia Millennium Development Goals Report 2003

**Table 1: Cambodia Child Survival Scorecard Interventions and Progress**

Intervention	Coverage					Target		
	CDHS 2000	2002	2003	2004	CDHS 2005	2007	2010	Universal Coverage
Early initiation of breastfeeding	11%	-	2% <sup>10</sup>	25% <sup>11</sup>	35%	35%	60%	99%
Exclusive breastfeeding	11%	-	2% <sup>10</sup>	-	60%	25%	80%	90%
Complementary feeding	71%	-	88% <sup>10</sup>	-	82%	95%	95%	99%
Vitamin A	29%	46%	59%	75%	35%	80%	85%	99%
Measles vaccine	55%	52%	65%	65%	77%	80%	92%	99%
Tetanus toxoid	30%	45%	43%	51%	54%	70%	80%	99%
Insecticide-treated nets	9% (3-38%) <sup>12</sup>	-	-	20% <sup>13</sup>	4.2% (11-37%) <sup>14</sup>	80%	80%	99%
Vector control ( <i>Aedes aegypti</i> ) <sup>15</sup>	181 sites	-	-	-	-	<10%	<10 sites	<10%
ORT	74%	-	45% <sup>10</sup>	-	58%	80%	85%	99%
Antibiotic for pneumonia	35%	-	75% <sup>10</sup>	-	48% <sup>16</sup>	50%	75%	99%
Malaria treatment	62% (2%) <sup>17</sup>	-	-	31% <sup>13</sup>	0.2% (0.3-3.3%) <sup>18</sup>	85%	95%	99%
Skilled birth attendance	32%	20%	22%	32%	44%	60%	70%	99%

<sup>10</sup> UNICEF, Seth Koma Follow-up Survey 2003; for ORT it includes only ORS and recommended home fluids

<sup>11</sup> Cambodia Socio-Economic Survey (CSES) Health and access to medical care in Cambodia 2004

<sup>12</sup> 9.2% is the national average; in the provinces with high malaria transmission (Koh Kong, Kratie, Mondulakiri, Preah Vihear, Ratanakiri and Stung Treng) insecticide-treated net coverage ranged from 3 to 38%.

<sup>13</sup> Report of the Cambodia National Malaria Baseline Survey 2004

<sup>14</sup> 4.2% is the national average; in the provinces with high malaria transmission – Preah Vihear/Stoung Treng, Mondulakiri/Ratanakiri, Oddar Mean Chey, Kratie, Koh Kong – the use varied from 11% to 37%.

<sup>15</sup> Given the increasing contribution of dengue fever to under-five mortality in Cambodia the Child Survival Steering Committee has decided to include vector control in the Scorecard; vector control for *Aedes aegypti* is the most important public health intervention to prevent dengue fever. The indicator used is the Breteau Index defined as: number of positive breeding sites per 100 houses (%) surveyed. Effective vector control is achieved when there are less than 10 breeding sites per 100 houses surveyed (<10%).

<sup>16</sup> 48% represents a proportion of children under 5 with signs of acute respiratory infection (cough and fast breathing) taken to a health facility or provider

<sup>17</sup> 62% of children in three provinces (Preah Vihear, and Pursat) with malaria transmission received any antimalarial drug, but only 2% received the recommended artemisinin-based combination therapy

<sup>18</sup> 0.2% is the national average; in the provinces with high malaria transmission – Preah Vihear/Stoung Treng, Mondulakiri/Ratanakiri, Oddar Mean Chey, Kratie, Koh Kong – the proportion of children who received anti-malarial treatment varied from 0.3-3.3%

During the assessment, both the MOH and WHO confirmed that the IMCI guidelines have been updated to include the use of low-osmolarity ORS and zinc for diarrhea case management. IMCI training materials have been revised and updated and were in final review before printing. Zinc has been added to the essential drug list and included among the drugs needed in next procurement for public sector. Until 2006, the government in Cambodia distributed Oralyte-branded ORS, procured through the Cambodian Pharmaceutical Enterprises, to the public health centers. Since 2006, WHO-approved ORS, supplied to the MOH by UNICEF, is distributed through health centers.

Unfortunately, in the private sector, only poor quality ORS brands are available. However, the public sector procured low-osmolarity ORS seems to be leaking into the private sector, and when this occurs consumers can access a quality product through private sector channels.

Although the plans are moving forward to procure zinc for public sector distribution, this may not be in place until 2008 given that the 2007 budget approved by the Ministry of Finance did not include the procurement of zinc. It is not yet clear from what source the zinc product will be procured. Registration of the zinc product being used in the DTK has been completed and the MOH authorities do not foresee any problems registering any zinc product for public sector use.

The IMCI Director is planning to start refresher training with the new IMCI guidelines which include the new diarrheal disease treatment protocols with zinc, in a phased manner. The 40% of health facilities that received previous IMCI training will receive refresher training this year. The MOH personnel from health facilities that have not yet been trained on IMCI will receive full training during a second phase.

Despite the availability of low-osmolarity ORS in the public sector for more than six months, health workers were not informed of the benefits of the new formulation nor were they aware that the MOH had been receiving the new formulation ORS from UNICEF. The decision to not inform health personnel of the change in formulation was a deliberate decision by the MOH to prevent confusion. However, as noted below, previously held perceptions on the effectiveness of ORS limited its use by health personnel and prevented benefits for diarrhea management that could have been realized had the new formula ORS been prescribed.

All MOH authorities interviewed reported that they were fully involved in the discussions with PSI about the pilot introduction of DTK, including the development of campaign message, the product insert, and the package. This consultative process has resulted in good collaboration with the different levels of the health system. Authorities were extremely positive about the DTK pilot introduction, emphasizing the increased demand that exceeded program projections, and the importance of working with the private sector to increase access to ORS and zinc. They considered that the current

channels of communication were helping to increase public awareness and education and allowed for monitoring of drug sellers and private providers.

#### **4. The Private Sector in Cambodia**

The private sector plays an important role in the provision of health services in Cambodia. There are more than 100 NGOs operating in the health sector. As the public health system has rebuilt, the NGO sector has played a critical role in the provision of health services. Many health sector NGOs coordinate through a non-profit umbrella organization, MEDICAM, which helps facilitate communication among NGOs and between them and the MOH.

In Cambodia there is also a wide range of for-profit private providers offering health services and products in both urban and rural settings. When people first seek diagnosis and treatment for an illness they frequently visit a private pharmacist, nurse, midwife, doctor, drug seller, or traditional practitioner. Unfortunately, the for-profit sector is inadequately regulated, resulting in inconsistent and often poor-quality health products and services. The majority of pharmacies/drug sellers are unlicensed, and Cambodia has a serious problem with counterfeit drugs. A study conducted by RPM Plus<sup>19</sup> examined treatment for childhood illnesses and found a significant issue with prescribing practices of both public and private sector providers. Twenty-five percent of respondents of the household survey indicated that their child received an injection for treatment regardless of the condition, and providers from all types of drug outlets prescribe antibiotics for simple diarrhea.

Efforts to improve quality of care in the private sector, such as PSI's SQHN and PATH's work on tuberculosis with private health care providers, show promise. The government also recognizes the importance of both coordinating with and improving quality of care in the private sector and is working to better regulate the sector/industry and enforce existing regulations.

The team met with a large multinational commercial sector importer/distributor, DKSH Market Intelligence,<sup>20</sup> to better understand the commercial health care distribution system in Cambodia and explore the potential for the commercial introduction of zinc for the treatment of diarrhea. DKSH represents a wide range of multinational pharmaceuticals in the Cambodian market. The main challenge cited by the company in building a viable commercial pharmaceutical business is the low purchasing power of consumers, which prevents people from affording high quality products. As a result, the pharmaceutical business in Cambodia is highly price sensitive, with generics

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<sup>19</sup> Lynders, M. 2006 Community Drug Management for Childhood Illness. Cambodia Assessment, December 2004. Submitted to the US Agency for International Development by the Rational Pharmaceutical Plus Program, Arlington, VA: Management Sciences for Health.

<sup>20</sup> DKSH Market Intelligence is a Swiss Service group and market leader in marketing, sales, distribution, and logistics in Asia.

representing 40% of the market. Because DKSH primarily represents multinationals with branded products, a majority (90%) of their sales are in urban areas, predominantly Phnom Penh.

Efforts to introduce pediatric zinc through the commercial sector in Cambodia will likely face several issues. These include that the commercial sector is focusing on urban areas, and not reaching those most in need; that a viable commercial price will likely be beyond the ability to pay of many caregivers; and that it will be difficult to identify a zinc manufacturer interested in entering the Cambodia market given that the market for zinc is still very small, and those with greatest need are among the lowest income groups.

### **III. DTK Project Description and Progress to Date**

PSI/Cambodia began working in Cambodia 1993, when Cambodians had limited access to public or private health care. Initially, PSI/Cambodia focused on preventing HIV/AIDS and supporting the Royal Government of Cambodia's 100% Condom Use Program with its social marketing of Number One® condoms. Since that time, PSI/Cambodia expanded its work to other intervention areas, now offering two products for the diagnosis and treatment of malaria, and the OK® Family line of birth spacing products. PSI/Cambodia also created two private sector networks, the United Health Network (UHN), an umbrella organization of PSI partner NGOs, and SQHN, a network of clinics.

In March 2006, PSI/Cambodia, with funding from USAID, UNICEF, and WHO, introduced the OraselKIT® in the marketplace. This diarrhea treatment kit contains two sachets of the new WHO/UNICEF-recommended reduced-osmolarity ORS and 10 tablets of 20 mg dispersible zinc for the treatment of simple diarrhea among children. The program was launched in priority ODs in two provinces Pursat (Bakan and Sampov Meas) and Siem Reap (Kralach, Angkor Chum, and Siem Reap).

The provinces of Siem Reap and Pursat have some of the most dire health conditions, especially for children under five. As noted above, the national under-five mortality rate is 83 per 1,000 live births. The rates are higher in the intervention areas: 94 in Siem Reap and 106 in Pursat.<sup>21</sup> According to a research conducted by URC in May of 2003, only 9.3% of children under five in priority ODs in Pursat and 12.2% in priority ODs in Siem Reap who had diarrhea during the two weeks preceding their survey received ORT (ORS and/or home-made sugar-salt solution).<sup>22</sup> Therefore, the provinces of Pursat and Siem Reap provided an excellent opportunity to test the viability of increasing use of ORS through the DTK.

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<sup>21</sup> Cambodia Demographic and Health Survey, 2005.

<sup>22</sup> URC, 2003. Health Facility Assessment in Seven Provinces of Cambodia, Phnom Penh.

PSI/Cambodia planned to launch the project in March 2005 with a total budget of \$136,000. This included \$19,000 in commodities from WHO and \$117,000 in funding from USAID to support training and communications activities. The project did not launch the DTK until March 2006 due to delays caused by the USAID requirement that the zinc producer obtain pharmaceutical Good Manufacturing Practices certification from UNICEF prior to allowing USAID-funded programs to purchase the product with its funds.<sup>23</sup> In September 2006, the project received an additional \$160,000 from USAID to maintain the program through September 2007. During the one-year delay, PSI coordinated with the MOH and partners at all levels, held consultative meetings, and designed and tested campaign messages, pamphlets, product packaging, and insert.

## **1. Pilot Project Goal and Objectives**

The DTK pilot project goal is: improved child health in Cambodia through reduced incidence and severity of childhood diarrhea. The project purpose was to encourage use of zinc plus ORS in Siem Reap and Pursat by caregivers of children under five. The project logframe is available in Annex 7. Project outputs included:

- Increased access to a diarrhea treatment kit that includes ORS and zinc in priority ODs in Siem Reap and Pursat, and
- Improved knowledge, attitudes and beliefs about home management of childhood diarrhea among caregivers of children under five in target areas.

## **2. Project Strategy**

PSI/Cambodia's approach is to mobilize private sector distribution networks to make high-quality 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. Selling the product also creates a small profit margin for wholesalers and retailers, and this acts as an incentive to ensure the widest possible product distribution. Behavior change communication is an integral element of social marketing. Mass media product advertising serves to create demand among consumers, the trade (wholesalers and retailers) and health care providers. Behavior change communication implemented through mass media and interpersonal communications (IPC) encourages healthy behaviors among individuals, thus leading to long-term health impact. In addition, for the DTK program, PSI/Cambodia partnered with NGOs working in child survival in rural areas to improve access and reach those most in need, and involved WHO, and the public sector at the central and local levels in program design and implementation.

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<sup>23</sup> This was a requirement imposed on all planned zinc introduction projects worldwide that are planning on purchasing product with USAID funds, with similar resulting program delays.

### 3. Project Elements

The DTK program had eight project elements as listed below:

- a. Partnership with the MOH
- b. Partnerships with local NGOs
- c. Product development
- d. Pricing
- e. Distribution
- f. Behavior change communication
- g. Training
- h. Monitoring and evaluation

#### a. Partnership with the Public Sector

The public sector at the central, provincial, and district levels were key partners in implementing the DTK program as described above. At the central level, the project had support from MOH officials at the highest level including the Minister of Health, the Secretary of Health responsible for Maternal and Child Health, the Director of IMCI, and the Director of the National Maternal and Child Health Center. In addition, a direct relationship was established with public sector facilities through partnership with RACHA. This is described in detail below. Provincial- and district-level staff were involved in all the major aspects of the program including 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 the partnership with RACHA, MOH staff at the OD level were involved in product sales and distribution and monitoring the performance of village shops. This public-private partnership allowed the government to better understand and monitor the activities of rural private providers (village shopkeepers), and to be active participants in changing diarrhea treatment behaviors. Government collaboration was a key component in the success of this project.

#### b. Partnerships with Local NGOs

During the initial period of project development (2005), PSI identified four NGO partner organizations working in the area of child survival that were interested in partnering with the project and had a track record of reaching rural communities. These were: RACHA, CARE, ARC/CRC, and PATH. PATH was interested in expanding its work with licensed pharmacies and depots. However, the delay in the DTK launching prevented PATH from participating as its project was coming to an end.

No funding has been provided to any of the partner NGOs. A Memorandum of Understanding outlining each partner's roles and responsibilities was agreed upon and signed. In each case, the product is sold at subsidized cost to the NGO partner. 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.

### *The Reproductive and Child Health Alliance (RACHA)*

RACHA was created in 1996/97 by a partnership of three USAID projects: BASICS, Family Planning Service Expansion and Technical Support, and Engender Health. Although it was conceived by these projects, in 2003 RACHA was converted into a local NGO.

The goals of RACHA are to improve reproductive health and child health, and reduce the prevalence of HIV/AIDS and infectious diseases. Its priority areas include work on IMCI through a village health program, child survival (food fortification, vitamin A distribution), and support to MOH with capacity building in logistics, health information systems, and health center performance contracts. At the village level, RACHA has developed micro credit programs for village shops and social networks for healthy communities and supports VHSG.

Additionally, RACHA implements health promotion activities through traditional birth attendants, nuns, and wat grannies, as well as a group called Comedy for Health. To encourage the adoption of the MOH guidelines in fluid replacement for diarrhea, RACHA started the Comedy for Health show 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 usually establishes its offices within the OD MOH office. RACHA provides financial and technical support to health center staff for training VHSG and for monitoring visits within the catchment area of the health facility.

RACHA is participating in the new strategy of contracting out services with the MOH using funds from the Asian Development Bank and the World Bank. In agreement with the MOH, RACHA manages the public health services, paying the MOH staff that work within the health centers. RACHA pays the salaries of these personnel in two provinces, providing a supplemental salary to a level established as appropriate for health personnel. The contract is based on performance and the target is set by the contractor.

RACHA had previous experience working with PSI/Cambodia as part of the UHN.<sup>24</sup> 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, they repeat the process with another product.

Prior to the DTK project, PSI and RACHA worked together to make a range of other health products available through RACHA's village health program. For example, approximately 1,000 village shops purchased PSI contraceptive pills and condoms directly from RACHA. In addition, village shops obtained ORS commercially, and were provided with training on ORS by RACHA. Among those shops, 555 were trained on birth spacing and 279 were trained on HIV/AIDS prevention and dual protection. Together, these village shops have sold more than 160,000 ORS sachets, 60,000 condoms, and close to 20,000 pill cycles in the past four years. Village shops and shopkeepers are very good examples of how to use existing resources on which the poor in rural communities rely to introduce crucial public health products.

RACHA also has a peer-education project onto which messages regarding the appropriate treatment of diarrhea have been built. RACHA already had a presence in Siem Reap and Pursat provinces.

Initially, RACHA provided the supervisory component for this activity, but due to a reduction in personnel, supervision is now provided by outreach teams from MOH health centers. In provinces where they are not introducing the DTK, they continue to distribute ORS. In order to motivate the shopkeepers to carry ORS, RACHA offers to buy any unsold ORS that have expired. The village shopkeepers restock contraceptives and ORS themselves from wholesalers at the district or province level.

RACHA agreed to distribute the *OraSelKIT*® through 500 village shops in Siem Reap and 379 shops in Pursat. To do so, RACHA chose to use a unique process of distribution that differed from the distribution channel they typically used to distribute PSI products. They decided 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, create a link between the health centers and the village shopkeepers, promote ownership by health center personnel of the activities, and provide incentives for public sector workers.

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<sup>24</sup> PSI/Cambodia developed the UHN initiative in 2002 with the objective of training NGOs in social marketing and its products, with the goal of increasing access in rural and hard-to-reach communities. UHN currently numbers 26 members conducting social marketing at the community-level in 16 provinces.

As illustrated in Table 2, RACHA buys the product from PSI at an agreed upon UHN price of 800 riel. RACHA sells the DTK to the OD for the same 800 riel price, and the OD, in turn, sells the DTK to the health centers at 900 riel, adding a 100 riel mark-up that remains in the OD. During their bimonthly community visits, health center staff sells the DTK to village shopkeepers at 1,200 riel, making a 300 riel profit for the health center. Finally, shopkeepers sell the product to consumers at 1,500 riel, making a profit of 300 riels. This structure both involves and motivates the public health system at the local level to actively participate in the program.

**Table 2: RACHA Pricing Structure in Cambodian Riels**

	RACHA	Margin	OD	Margin	Health Center	Margin	Village Shop	Margin	User
<b>Price paid</b>	800	0	800	100	900	300	1200	300	1500
<b>Percentage increase</b>		0.0%		12.5%		33.3%		25.0%	

PSI provided training to RACHA core trainers, training materials, and information, education and communication (IEC) materials (banners, pamphlets with graphic demonstrations on the use of the product) for promotion at shops. RACHA also trained provincial- and district-level public health staff, and health center volunteers (there are no health centre volunteers but only village health support groups) (members of VHSG), and then utilized the staff of the health center to directly train village shopkeepers and monitor the program through bimonthly follow-up visits.

In addition, RACHA implemented its Comedy for Health program directly with local populations in target areas in Pursat and Siem Reap and used branded *OraselKIT*® promotional materials regularly to support sales and distribution activities. RACHA personnel also work in the promotional booth that is set up during PSI's MVU show, and sell the kit, promotional material (a CD with karaoke of the promotional song, T-shirts), and other products designed and distributed by PSI.

The health center personnel collect information on the sales from health centers to village shops and also on the sales from village shops to consumers. Although a survey was planned to assess knowledge, attitudes and practices regarding the DTK, this has not yet been conducted.

RACHA provincial coordinators provided the following feedback on DTK introduction to date in the two provinces:

- The product (DTK) is very effective and is well accepted by users (e.g. tastes good, stops diarrhea faster, increases appetite).
- DTK is affordable in Siem Reap but too expensive in Pursat.<sup>25</sup>

<sup>25</sup> When this perception was probed further during the visit to Pursat, it was not supported by consumers, and seems to be more the perception of a minority of RACHA staff.

- The DTK distribution has helped to create good relationships between RACHA and health center staff.
- The program has resulted in a good collaboration with the provincial and district offices as well.

RACHA staff acknowledged the value of working with PSI and the limitations in their own organization if they wanted to manage the program without PSI. For example, they do not deal with procurement, distribution, or mass media campaigns.

RACHA's concerns and recommendations regarding the project to date include:

- Avoid disruption in supply.<sup>26</sup>
- Consider caregivers' preference for including three packets of ORS. (This request did not seem to be substantiated by the need.)
- Continue MVU shows (which were suspended during shortage of product)
- Increase mass media campaigns particularly during the rainy season when MVU shows are not possible due to road conditions.
- Emphasize the importance of completing 10 days of zinc treatment.
- Increase the number of monitoring visits by health center staff.
- Scale-up program to other villages through village shops because accessibility to health centers is limited.

### *The American Red Cross/Cambodian Red Cross Integrated Child Health Project*

The CRC is implementing a USAID-supported Integrated Child Health (ICH) Project in 254 villages of the Angkor Chum OD in Siem Reap with technical and financial support from the ARC. The goal of the ICH Project is to reduce child morbidity and mortality in a sustainable fashion. Diarrhea prevention and treatment are key elements of the program. The project has four strategic health objectives: 1) improve the nutrition of children under two, 2) increase immunization rates, 3) strengthen community management of the sick child, and 4) strengthen the management capacity of the CRC. The Angkor Chum OD of Siem Reap Province covers three administrative districts, Varin, Angkor Chum, and Pourk, with an estimated population of 213,749. The project serves an estimated 43,610 children under five years of age and 52,744 women of reproductive age.

The project uses a community-based care group model for organizing and supporting the Red Cross volunteers (called Community Volunteer Care Group, or CVCG). Specifically, through its network of nearly 2,000 CVCGs, the project promotes, through home visits and edutainment sessions, improved health practices. Besides diarrhea prevention and treatment volunteers convey messages such as

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<sup>26</sup> PSI was forced to ration the product for wholesalers during the a period when demand was increasing and product in short supply.

hand washing, recognition of diarrhea danger signs, case reporting and oral rehydration, use of boiled water, breastfeeding, and nutritional counseling. Volunteers deliver messages on malaria control and immunization, and the need to seek clinical care for severe illnesses. The CVCGs generally visit 20 households each month to deliver these educational messages.

The ICH Project incorporated the introduction of zinc and new osmolarity ORS into their workplan in 2005. PSI saw an opportunity in the ARC/CRC program to build the DTK into the ARC/CRC care group system and, although the pilot did not start until April 2006, ARC/CRC managers were active participants in message and product development.

The DTK component was launched in April 2006 in 20 villages of the ICH Project. ICH established DTK committees in each of the villages, composed of leaders of the community and members of the VHSG with whom the health center personnel and the ARC/CRC coordinates for project activities, as well as one volunteer selected from among the several volunteers in each village. This volunteer, called Red Cross volunteer leader (RCVL), is responsible for sales of the DTKs and holds the safe box where the money from sales is kept.

The ARC/CRC purchases the kit from PSI at 800 riel as does RACHA. Then, it provides it free to the DTK committees. In DTK program villages, volunteers detect a case of diarrhea and provide educational messages to the caregiver on diarrhea case management, encouraging her/him to purchase the product from the RCVL. The caregiver pays 1,500 riels for the kit; 300 riels are given as incentive to the volunteer who brought the user to the RCVL, and 1,200 riels are kept in the safe. The ARC/CRC project has trained the DTK committees and expects that the money will be used for referring cases to health facilities when needed and for other village activities.

Until September 2006, only 20 villages in Angkor Chum district were receiving the *OraSelKIT*® through the DTK committee. In August 2006, only three months after the DTK introduction, an external team conducted a mid-term evaluation of the ICH Project.<sup>27</sup> The mid-term evaluation team, seeing the positive results of the *OraSelKIT*® in increased ORS use and reduced pill usage for diarrhea, recommended that the introduction of *OraSelKIT*® be expanded to 20 more villages.

In villages where DTK has not been introduced, the volunteers detect diarrhea and provide education for case management as well but only demonstrate how to prepare ORS. During the last six months, the volunteers had the new low-osmolarity

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<sup>27</sup> Integrated Child Health Project – Activity and Evaluation Report, October 2006 – Diarrhea Treatment Kits

ORS from UNICEF to use for demonstrations. Although the UNICEF low-osmolarity ORS is only for use in MOH health facilities, the ARC/CRC bought the UNICEF product for training purposes in pharmacies and wholesalers in the outskirts of Siem Reap, not realizing that it was not intended for sale through private sector channels. This is an example of how products that are meant for public sector end up in the commercial sector.

To compare the indicators measuring ORS use alone, and use of medicines, the ARC/CRC evaluation team compared data from a number of villages where *OraselKIT*® had been introduced with a similar number of villages that had only received ORS promotion. Table 3 shows the most important results when compared with the baseline survey data in 2005 from all villages studied.

**Table 3: Comparison of Use in DTK Villages versus Non-DTK Villages**

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

*\*Integrated Child Health Project – Activity and Evaluation Report, October 2006 – Diarrhea Treatment Kits*

The results show great use of the DTK, versus ORS alone, and a significant decrease in the use of pills for the treatment of diarrhea. Another finding from the mid-term evaluation team was that mothers' understanding was high regarding the importance of taking children with severe diarrhea to the health center, using boiled water, and washing hands.

The ARC/CRC managers expressed their enthusiasm for working with PSI in this activity. According to the agreement established between the two organizations, PSI has provided training-of-trainers (TOT) to ARC/CRC staff. Topics covered include record keeping and receipts, social marketing, IEC messages, stock management, and appropriate use of kit components. ARC/CRC staff trained the volunteers and the RCVLs on these topics, and the DTK committee in the appropriate use of the funds. The mid-term evaluation recommended changing the style of training from lecture-based to a more participatory approach.

ARC/CRC managers recommended the following:

- DTK distribution should be expanded to other areas.
- PSI should continue as the organization driving the effort of zinc introduction because of its capacity to involve multiple stakeholders at all levels. PSI is thought to be the only organization with the capability to manage the coordination at all levels, with MOH, NGO, and provincial- and district-level partners, if the current pilot effort is to be scaled-up.
- Involvement of multiple local NGOs is vital to expand the reach in rural areas.

- Multiple distribution channels are needed (e.g., pharmacies, village shopkeepers, volunteers) to make the product widely available.

The ARC/CRC did not find that packaging ORS and zinc together was costly or poorly received; rather the community was more receptive to this, i.e. people like to have both products in a single package. For ARC/CRC the logical next step is to expand DTK sales to all 254 villages where the ICH project is operating, but this will depend on PSI continuing the marketing of the product.

#### *CARE*

At the time of PSI's agreement with CARE, CARE was implementing a community health project in Bakan district, Pursat province. The project utilized village health volunteers (VHV) and community-based distributors (CBD) to work with communities at high risk for HIV/AIDS.

Implementation with CARE began in April 2006. PSI trained CARE staff who in turn trained the VHVs. The DTK then was to have been distributed through 434 VHVs, of which 69 are CBDs, but implementation was halted in September 2006 when CARE's funding for this province was discontinued. Also suspended was the dissemination of DTK messages through CARE's Mother Contests and VHV Mother Clubs. CARE's geographic area was turned over to RACHA following the reduction in the CARE program.

#### **c. Product Development**

The package contents, design, logo, and insert were developed using formative research with target consumers. In addition, discussions with key stakeholders and those involved in best practices, such as WHO Cambodia and Geneva, were key in product development. It was determined that the most appropriate content for the kit would be two sachets of low-osmolarity ORS and one blister pack of zinc. In addition, a detailed low-literacy insert was developed containing illustrated instructions for product use, educational messages regarding diarrhea home management and prevention, and referral advice for when danger signs appear. The formative research conducted on packaging also found that consumers wanted to ensure that the two products were sold together and were concerned that if the package were not sealed, vendors would break up into components and sell them individually. Therefore, a seal was placed on each individual package.

#### d. Pricing

PSI currently sells the DTKs at 800 riel to NGO partners and SQHN providers, and 1,000 riel to the commercial sector. The product sells to consumers for 1,500 riel (\$.375).<sup>28</sup> PSI determined that this price would be affordable to the target population based on FGDs and price comparisons. ORS currently sells in the market for between 300 and 500 riel. While no zinc could be found on the market at the required dosage and form, the goal of the program was to replace use of antibiotics with zinc for simple diarrhea. Typically, antibiotics sell 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. The price of the *OraSelKIT*® was considered comparable for a significantly more effective treatment.

Discussions with FGD participants as part of this evaluation and the high demand for the product, even in rural communities indicate that the price was considered both reasonable and affordable by the consumer.

In the event that donated products are no longer available, the program could only continue by covering the cost of the product and packaging through product sales. Currently the product, packaging, and insert cost \$.375 (1,500 riel) per unit. This includes \$.195 for zinc, \$.072 for the two ORS sachets (excluding shipping) and \$.11 for the packaging including box, ORS labels, shipper, carton, seal, and insert. This results in a product cost recovery rate of 53% at 800 riel, and 67% at 1,000 riel. While it is unlikely that the cost of zinc and ORS will come down in the short term, packaging costs will be reduced as the program is brought to scale and larger quantities can be ordered. PSI anticipates that packaging costs could be reduced to \$.07, which would result in a final product cost of \$.337 (1,348 riel) and a product cost recovery of 74% at 1,000 riel. Full cost recovery would require that the final consumer price increase to approximately 2025 riel, perhaps making it beyond the reach of some consumers.

**Table 4. Actual Cost of DTK**

Zinc	\$0.1954
ORS (2)	\$0.0718
Packaging and insert	\$0.11
Total	\$0.3772 = 1,500 riel

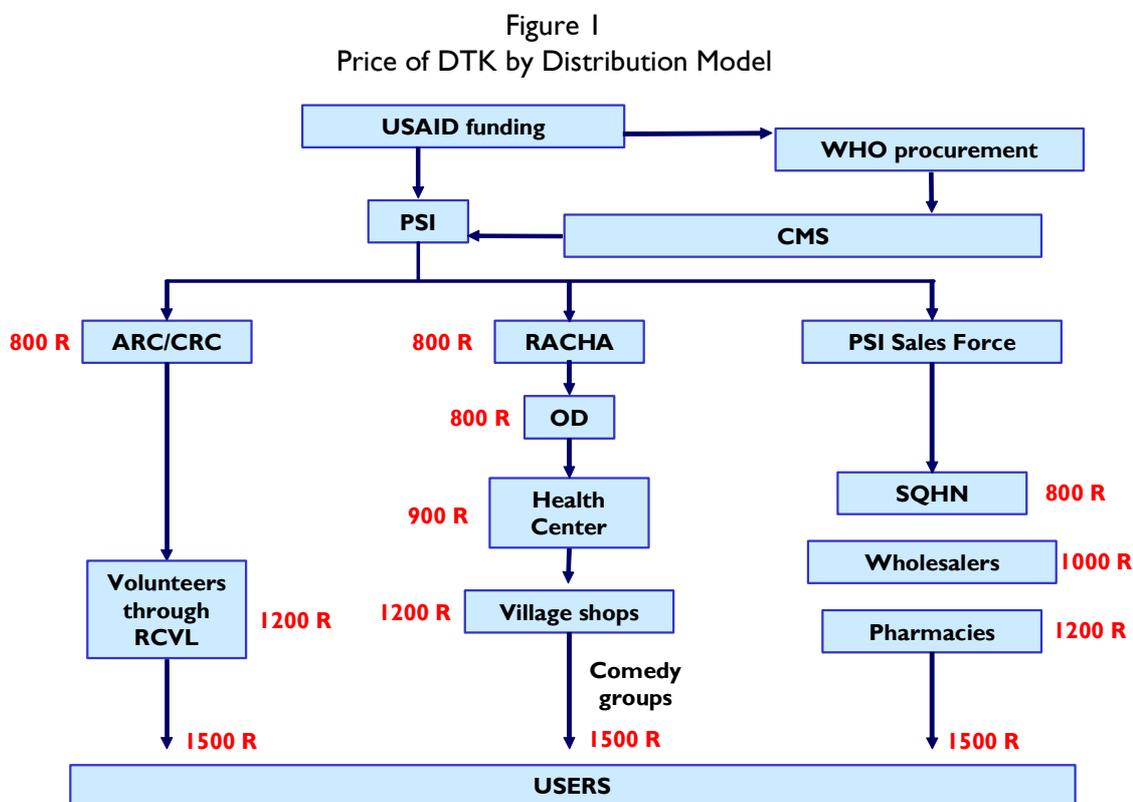
#### e. Distribution

In the pilot areas, priority for distribution was through the NGO partners as they were most likely to reach a rural target. This was particularly important when the program realized that demand was greater than anticipated and the product began to stock out. In addition to distribution through village shopkeepers, ARC/CRC community volunteers and CARE CBD workers, PSI sold the product through its traditional

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<sup>28</sup> US\$1.00 = 4,000 riel.

distribution network including wholesalers, pharmacies, and drug shops, and the SQHN and other health care providers as is illustrated in Figure 1.



A higher-than-anticipated acceptance of and demand for the DTKs resulted in a rapid depletion of all stocks in the first six months of the project requiring PSI to ration the product to those wholesalers giving priority to the NGO partners. Contributing to the stock-out were a change in price for the zinc product from Nutriset, the only UNICEF/WHO-certified supplier; a WHO order of ORS from a producer that did not allow PSI to re-label the ORS as Orasel; and the length of time needed for procurements through WHO. Two weeks previous to this assessment, the MOH CMS had received 5,472 blister packs of zinc for PSI use and more had already been order to cover the rest of the year supply.

#### f. Behavior Change Communication

The project used a range of communication vehicles to communicate its messages. These included mass media: television, cinema radio, a docudrama, billboards, point-of-sales material including stickers, posters and leaflets, and IPC through its NGO partners and its own “info days.”

The television and radio advertising focused on communicating four key messages:

- The OraselKIT® is an effective treatment for mild diarrhea in children.
- The kit contains two sachets of ORS and 10 tablets of zinc.
- Mix the products in boiled water or breastmilk; take ORS several times daily and zinc for the full 10 days.
- ORS replaces liquids lost in diarrhea and zinc improves recovery, strength and helps prevent diarrhea for 2-3 months.

The billboard and point-of-sales material (other than the leaflet) were focused primarily on promoting the brand and increasing awareness of where the product was available.

The docudrama movie covered 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 feeding. The docudrama was shown at the MVU presentation. These presentations were complemented by karaoke (using the Orasel radio and television advertising jingle that builds on a popular Cambodian song), direct interaction with the audience during question-and-answer sessions, competitions, and demonstrations of how to prepare and take the product.

PSI/Cambodia used “Info-Days” as one way of educating health and trade partners on the product, disseminating information on where it can be obtained, the pricing structure, and the key health message.

In total, the program has placed seven billboards and aired to date 448 TV spots, 310 spots in cinemas, 2,400 radio spots, and 60 MVU shows with approximately 300 people in attendance at each show. Finally, as discussed above, the NGO partners, through their networks of staff and volunteers, are playing a critical role in implementing IEC, using comedy, theater, and one-on-one interactions with potential users.

PSI/Cambodia works closely with the MOH as well as WHO, USAID, the IMCI working group and the NMCHC to ensure that all communications and marketing strategies are in line with government policy and the most current thinking regarding the possible issues that surrounded the introduction of a new product such as zinc. WHO Geneva was invited to review the materials and its agreement was ensured before final production.

#### **g. Training**

The project implemented an extensive training program. PSI implemented a TOT program for NGO partners and Provincial Health Authority staff, training 48 personnel.

In addition PSI directly trained 164 private providers including: Sun Quality Network providers, doctors, midwives, nurses, and pharmacists. Following the TOT, RACHA directly trained public health center staff, village shops, VHSGs, and nuns. CARE trained its CBDs, VHVs, and traditional birth attendants. ARC/CRS trained its volunteer health workers and the VHSG. As Table 5 illustrates, a total of 2659 providers were trained (909 in Siem Reap and 1,750 in Pursat).

**Table 5: DTK Training Summary Report**

Type of Training	Conducted by	Number of providers trained	Type of participants
TOT	PSI Cambodia	48 participants	<ul style="list-style-type: none"> <li>• CARE: 12 participants</li> <li>• RACHA: 19 participants</li> <li>• Public health staff: 16 participants –(11 from Pursat, 5 from Siem Reap)</li> <li>• ARC: 1 participant</li> </ul>
Training for private providers	PSI Cambodia	164 participants	<ul style="list-style-type: none"> <li>• SQHN providers: 14 participants</li> <li>• Other medical providers: 22 participants</li> <li>• Drug sellers: 128 participants</li> </ul>
Training for MVU and sales representative staff	PSI Cambodia	26 participants	Sales rep and MVU staff
TOT for health center staff	CARE Pursat	20 participants	Health center staff
Orientation training for health center staff	CARE Pursat	70 participants	Health center staff
Training for CBD shop owners	CARE Pursat	80 participants	CBD shop owners, OD Bakan
Training for VHVs	CARE Pursat	70 participants	Village health volunteers
Training for health center staff	RACHA	100 participants	Health center staff
Training for community	RACHA	1361 participants	<ul style="list-style-type: none"> <li>• Granny: 17</li> <li>• Nun: 505</li> <li>• VHSG: 35</li> <li>• Shopkeepers: 804</li> </ul>
Training for VHVs	ARC	74 individuals in 40 villages	VHVs

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 make the zinc solution, how to take the products, and potential side effects.

## **h. Monitoring and Evaluation**

The project relied on a range of sources for monitoring and evaluation as budget was limited to cover program implementation expenses. The agreements with ARC, CARE, and RACHA called for the organizations to report results and to include the DTK in any household surveys they were conducting. While NGO partners provided project reports it was difficult to easily glean the necessary information because there was no standardized procedure to collect the needed indicators. ARC was the only partner to actually implement a household survey. The results of the survey (and type of indicators collected, particularly actual use of ORS and drugs) are invaluable in helping to monitor progress and evaluate the program.

In addition, the project had planned for an end-line household survey, but this was put on hold by USAID due to concerns that the survey was being undertaken by the organization implementing the program and would therefore not be objective. USAID Cambodia has agreed that funding for the household survey is needed but it would prefer an independent organization to conduct the research.

## **IV. Perceptions of Acceptability of DTK**

### **1. Providers and Community Members**

#### **Medical Providers**

The team interviewed a Pediatric Association of Cambodia (PAC) staff member, who confirmed that pediatricians in the capital were aware of new global recommendations for diarrhea treatment regarding low-osmolarity ORS and zinc. PAC members have been participating in the Continuing Medical Education (CME) Program supported by PATH that started by reviewing/adapting all materials from the Scientific Symposium on Diarrhea Disease Control conducted in November 2005 in Phnom Penh. These adaptations are being undertaken by the PAC Board and senior pediatricians and will be used to develop the training materials and orient the training team. The CME program is being expanded to PAC members working the provincial sites.

The PAC believes that there is a need for more information for pediatricians about the benefits of using the new low-osmolarity ORS and opportunities to conduct clinical studies to convince pediatricians to use ORT rather than intravenous fluids inside the hospital. The PAC informed the team that 100% of cases of diarrhea in the hospital are treated with antibiotics. Among the antibiotics the most widely used are cotrimoxazole, ampicillin, amoxicillin, and metronidazole.

As mentioned above, the provincial health directors, the OD directors, and some physicians in the referral hospitals in provinces visited were not aware that the ORS

available in their facilities and warehouses was the new low-osmolarity formulation. This confirms the need for the MOH not just to update personnel about the benefits of the new formulation and to have oral rehydration units functioning at the facility level, but also to inform practitioners of the type of ORS that is being supplied to the public health facilities. The deliberate action of not informing personnel about the change in ORS formulation, although with the good intention of avoiding confusion, is limiting the use of the current ORS available in health facilities. Practitioners know that children with mild dehydration will not drink the standard ORS because of the salty taste, they know that it increases stool output and makes mothers more anxious about diarrhea “not stopping,” and they are convinced that caregivers who bother to come to the health facility will want medicines and intravenous solution, and not to just be given ORS.

During our visit we could not discern whether the cases that were receiving intravenous fluids were appropriately or inappropriately treated because we were not present to assess the level of dehydration or complication that the child had when arriving at the health facility. Providers, however, are aware that a caregiver has several alternatives for treatment closer to home, and only when they perceive that the child needs further care will they come to the health facility. This indicates that caregivers expect to receive more than just oral rehydration when bringing a child with diarrhea to the facility. A doctor in a referral hospital said regarding to a patient: *“mothers will not accept Oralyte [the name that was previously 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.”*

Doctors were aware of the DTK pilot program and had heard that the product was effective and accepted by caregivers and children. They considered the ORS in the DTK more effective and liked by children. A doctor in Kralanh’s referral hospital said: *“The community prefers Orasel because it is tasty (not as salty as the Oralyte).”*

### **Providers at Pharmacies and other pharmaceutical outlets**

The team visited pharmacies and drug sellers in the urban and peri-urban areas of both capital cities in the target provinces. We found the new low-osmolarity ORS from UNICEF available in all outlets visited even though it was procured for the MOH. In some drug outlets, other ORS brands, with the old formulation, were available.

The pharmacies and depots in the SQHN also carry the DTK provided by PSI. Usually, these facilities have an area for consultation and beds for cases that need intravenous fluids and observation. When asked about what the providers would offer for diarrhea, immediately they replied the DTK. However, after more probing, they also indicated that they first will give an intravenous fluid, and, when that was over, they will sell the mother the DTK and other drugs. In one of these facilities, the number of medicines used (including intravenous fluid, vitamins, the DTK, and drugs) cost a total US\$10.

Among the medicines that pharmacies and sellers prescribe for diarrhea are several drugs that are specially designed for children. One of the most commonly sold is a sachet of a mixture of bacilli and yeast to regenerate intestinal flora. Another sachet, also effervescent, is smectite, a charcoal-type antidiarrheal. A new product that is available for infants (the picture of a baby in nappies and crawling on the box) is a small sachet of loperamide.<sup>29</sup> This product is produced by a Cambodian company and is easily used by dissolving it in water. Although the person in charge in the pharmacy insisted that it is rarely used and it is only recommended in small doses, the availability of this product should be reported to the MOH Department of Food and Drugs as an unacceptable medicine for children and its withdrawal from the market should be strongly recommended.

### **Village Shops**

Village shops are located within communities. Those visited were associated with RACHA; however, we also saw some shops along the main roads that carry DTKs. Besides DTKs, some shops also carry both standard ORS (Oralyte) and the new UNICEF low-osmolarity ORS (both for use in public health facilities). Shopkeepers indicated that there is high demand for DTKs. They have not had complaints from caregivers about the price (1,500 riel). Some mentioned that they sell 2-3 DTKs per day.

Shopkeepers were very knowledgeable about the use of the DTK and had graphic materials to help explain its use to caregivers or consumers who come to buy the product. They knew all the important messages about the product. More importantly, when asked, they mentioned the signs and symptoms that will require referral of a child to the health facility.

Several of the shops visited also carry a limited variety and quantity of drugs. In general, these drugs are loose (out of the original package), are exposed to the sun, and are said to be used mainly in adults. Most of the drugs observed were tablets, but it was difficult to learn whether they keep other products for children because they seem to be embarrassed by the questions. Difficulties in understanding what was being said and what exactly would cause the embarrassment of the shopkeeper prevent us from drawing any conclusions.

### **Caregivers**

The team interviewed caregivers at health facilities, and when they approached to purchase the DTK during the MVU show in one community. The team also observed

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<sup>29</sup> WHO recommended the withdrawal of pediatric formulation of loperamide from the market in 1990, due to the cases of paralytic ileum and the negative effects on the central nervous system of young children that led to lethargy, inability to swallow, and death in several cases. Many countries followed the recommendation and the main producer withdrew the product from developing countries.

and took notes with the help of a translator during four FGD sessions. Attendees at the focus groups were users and non-users but all had heard of the DTK. The FGD guide and transcripts of the sessions are available in annexes 4, 5, and 6.

Women interviewed mentioned that before DTKs were available, they would use a variety of medicines (tetracycline, charcoal) or take the child to the doctor for injections when the child had diarrhea. Currently though (they said), they use "*Orasel*."

Most responses seemed to pertain to the ORS, as women discussed at length how the child now drinks all of what is given and some women were even asking for more sachets to be in the package. The ORS in the package is perceived as more acceptable to children, less salty, and even more effective than the standard solution commonly known in Khmer as 'oralyte,' because caregivers perceive that the volume of stools decreases, usually after the second or third day. One woman mentioned that, in the past, when they used 'oralyte,' it seemed that the child's diarrhea got worse. The perception of reduction of stool output with the use of the 'Orasel' ORS was repeatedly mentioned in FGDs as well as in individual interviews.

The team made an effort to determine whether women were including the zinc tablets when discussing the benefits of what is known as "*Orasel*." Referring specifically to zinc (for which they use a particular word that also describes the construction material used in roofs and walls), they mentioned that children like the taste, that they could take them all at once if the mother is not careful. Several women mentioned that besides stopping diarrhea, when zinc is given for the 10 days, children have more appetite.

The team also wanted to explore whether caregivers wanted the product to be combined, whether they actually used the two sachets of ORS, and whether children were given the zinc for 10 days. The responses were quite definite in the sense that the package should continue to include both ORS and zinc. Women emphasized the need for both products together, and some explained that ORS replaces fluid and that zinc 'cures' diarrhea. They were very familiar with the package insert that explains how to use the products. As mentioned earlier, some women asked to have more ORS in the package, but that request was dismissed by others who said that if they needed more ORS they could always get it in the shops.

With regards to the use of zinc for the full 10 days, women explained that it was the right thing to do, particularly if diarrhea was to be prevented. Some mentioned an increase in appetite as proof that the child was getting better and associated this with giving the full 10 days of zinc rather than stopping zinc when diarrhea stopped. In two cases, we had women who misunderstood the instructions and gave half a tablet for a child older than six months. Then they threw away the remaining five tablets. A couple of mothers indicated that they did not finish the 10 days of zinc, but stopped after 4 or 5 days.

The women we interviewed in the MVU show or in shops were selected because of the opportunity to talk to them. They have experienced the benefits of using the DTK in previous occasions and wanted to have some available at home. People took advantage of the MVU show to resupply themselves. A shop owner was observed bringing two women to purchase from the MVU show booth because she had run out of the product in her shop.

Most frequently cited communication channels from which people learned from DTK were the TV spot, radio, village shopkeepers, ARC/CRC volunteers, and RACHA's comedy group. The MVU may not have been mentioned because shows have not been conducted in all communities yet. In terms of knowledge on how to prepare ORS and how to dissolve zinc, it seems that women have been taught to dissolve zinc in the ORS solution. Some wondered what to dissolve it in after the two sachets were consumed. More importantly, all women were knowledgeable about when a child should be taken to a health center. Some signs mentioned were vomiting, fever, blood in stools, sunken eyes, dry skin, and white spots in mouth (candida).

In regard to price, women interviewed during the MVU, at shops, and in the FGDs said that the price was reasonable. One woman said: *"if I can use it, I will pay."*

When asked where they would like the product to be available, they said they prefer that the product be available in more village shops or pharmacies close to where they live. They asked not to limit the product to health facilities.

Regarding other measures to take during diarrhea women responded that children should receive more fluids, continue breastfeeding if the child was breastfed, and provide more food. Several mentioned the need to boil water and wash hands, and clean the house and dishes.

It is important to acknowledge that our findings are anecdotal and that our sample in the FGDs may have been skewed by the need to interview a group of women at short notice. We are not clear about the selection process used by RACHA for the focus groups but at least these also involved women who had not used the product because their children had not had diarrhea. Interviews at shops and the MVU show were also opportunistic and we may have been interviewing those who actually like and accept the product.

The team believes that a household survey would be very important to confirm the extent to which our findings represent the acceptability and use of the product in the population of the intervention districts. Also, it will be important to understand the adherence to the use of zinc for 10 days as well as to learn whether the DTK is actually decreasing the reliance of caregivers on unnecessary medicines as found by CRC/ARC.

## **2. Interviews with Other Donors/Programs**

The assessment team also spoke with UNICEF officers and two NGOs (PATH and International Relief and Development). UNICEF officers were involved from the beginning of the project but had not been updated as to whether the MOH was considering expanding the program. UNICEF was not aware that the new ORS (purchased from UNICEF Supply Division in Copenhagen) had already been procured and was being distributed through the MOH health facilities. They explained that if the funding for procurement came from an international donor, it more likely went directly to Copenhagen without going through the UNICEF office in Cambodia. However, they showed interest in learning more about MOH plans as they are supporting a child health behavior change communication campaign. If zinc and the new low-osmolarity ORS are going to be available, messages regarding these products should be included in that campaign.

We discussed with PATH their work with pharmacies and depots in previous years (1995-2007). PATH worked with the Pharmacist Association and the MOH on organizational capacity building and training pharmacy personnel on the information needed to provide care for both acute respiratory infection and diarrheal diseases. Currently, PATH is conducting the Enhanced Diarrhea Disease Control Project, which aims to increase knowledge and awareness of new interventions (zinc, low-osmolarity ORS, and rotavirus vaccine) among Cambodian pediatricians and public health decision makers. One of the objectives is to develop the capacity of the PAC as a professional development organization. To accomplish these goals, PATH organized a scientific symposium on advances on diarrhea disease control, started a program on CME with the PAC, and supports the publication of the PAC newsletter and the organization of the mid-year and annual Pediatric Congress. One of PATH's main goals is to increase awareness of rotavirus disease and advocate for the introduction of rotavirus vaccine in Cambodia.

International Relief and Development has been awarded a Child Survival Grant from USAID/Washington that includes interventions focused on control of diarrheal diseases. Zinc introduction has been proposed as part of diarrhea control and the organization is expecting to be able to partner with PSI for the use of DTK in areas where the NGO works. This will be dependent on the continuation of PSI's DTK marketing.

## **V. Findings**

### **1. General Findings**

The data and information collected during the field visit (despite being mainly qualitative) and the review of documentation and reports from partners (with a small quantitative household survey from the ARC/CRC mid-term evaluation) suggests that

the program has been effective at increasing the use of the DTK, a proven treatment for childhood diarrhea, particularly among low-income, rural, and semi-urban populations.

PSI has successfully implemented the program, involving all levels of the system, building consensus among public health goals from the MOH and the NGO partners, and involving central and local authorities every step of the way. PSI continues coordinating partner activities and serves as liaison with central-level authorities. 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.

RACHA and ARC/CRC have been effective partners at reaching rural populations. RACHA's model is unique in its ability to support the public sector and village shops, although it is recommended that the feasibility of continuing this model be assessed once the products are available in the public sector. The ARC/CRC model working through community support groups is a great bottom-up mechanism that complements the role of the public sector to promote healthy behaviors in the community.

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

## **2. Public Sector Findings**

- MOH authorities fully approve of zinc and ORS being sold in the private sector in a combined package. The decision on whether the two products will be offered combined in a package or separately through the MOH facilities is still under discussion. The MOH has not restricted the provision of zinc to licensed practitioners only and supports using village shopkeepers to reach the community with the products.
- The MOH authorities have been kept informed about the progress of the project and were aware of the difficulties that arose as a result of a delay in procurement of both zinc and the new ORS formulation through WHO Cambodia.
- The involvement of the public health sector in selling the DTKs to village shop keepers and obtaining revenue at each step of the distribution process is not a problem for MOH authorities. On the contrary, it seems to be perceived

as a welcome incentive to keep MOH personnel interested and engaged in diarrhea treatment activities.

- At the provincial and OD levels, officers were well informed of the project progress and seemed to be fully engaged in the DTK introduction with PSI and in particular with RACHA.
- All public sector interviewees valued the collaboration with PSI and RACHA. They recommended that PSI partner with other NGOs and the commercial sector so the product reach is expanded and people have good access everywhere.
- Personnel at the OD level agreed that sales of DTK were an incentive for the health center staff and serve as an opportunity to train and follow up with VHSG and shopkeepers.
- In terms of price consideration, one provincial health director mentioned that the *OraSelKIT®* was affordable, *“if users come to the health facility [they] will have to pay user-fees anyway (around R 1000) apart from the cost of medicines and transportation; they better get it [DTK] in the community.”*
- The MOH has introduced the new low-osmolarity ORS in its public health facilities six months before this assessment although MOH personnel were not aware of the difference with the standard ORS previously received.
- Plans are underway to train public health facility personnel and to also introduce zinc as soon as it is procured for public health facilities. Refresher training is programmed for this year for those already trained in the previous IMCI curriculum.

### **3. Private Sector Findings**

- Messages and communication materials were well designed and convey appropriate messages.
- Inclusion of multiple partners resulted in an improved coverage and reinforcement of messages.
- The program effectively leverages partners’ resources and infrastructure.
- The public-private collaboration has been effective in building support for the program and in engaging the public sector at all levels.
- Multiple distribution channels including village shops, volunteers, pharmacies, and private providers are effective in increasing DTK access and use.
- Mass media combined with IPC has resulted in high awareness, improved knowledge, and use of DTK.

- IPC activities by partners complement the mass media campaign conducted by PSI.
- Current product price seems to be affordable to caregivers.
- Private practitioners' first treatment choice is still intravenous fluid, after which the DTK is sold with other drugs.

## VI. Recommendations

### 1. Main Recommendations

- **A household survey needs to be conducted to validate these findings.** A household survey that actually measures the degree of DTK use, adherence with 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 if the program is to be expanded at 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.
- **The DTK program should be continued and expanded to ensure that children have access to effective treatments for diarrhea.** Based on the limited data available and results of field observations, the assessment team recommends expansion of the DTK program through NGO partners to other target areas. RACHA and ARC/CRC are strong and effective partners and expansion in the ODs where they work should be priority for scale-up.
- Any **scale-up will require a coordinating organization** with expertise in procurement, product distribution, mass media communication, training, monitoring and evaluation, and ability to coordinate with partners at multiple levels.
- An on-going challenge is to change the behavior of clinicians, pharmacists and drug seller who continue to sell inappropriate treatments. The team recommends **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. 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.

- **The MOH needs to alert its staff and the general population that the new low osmolarity ORS is available** in its facilities.
- A joint public-private sector effort needs to be initiated to **ensure the formal introduction of low-osmolarity ORS into the commercial sector**. The MOH should encourage private sector suppliers to produce and/or import the low-osmolarity formulation, so that consumers do not have to rely on “public sector leakages,” but can have access to high-quality and effective product in private sector.
- **Assessment results should be disseminated to key stakeholders such as the MOH** (central, provincial, and OD levels), partner organizations (RACHA, ARC/CRC, PSI), organizations working in child survival (BASICS, UNICEF, and others).

## 2. Additional Recommendations

- Expansion to other provinces beyond RACHA and ARC/CRC’s will require identification of suitable partners and strategies to reach the village level
- This may entail providing start-up funding to partner organizations for implementation. At present DTK introduction is an add-on to the ongoing activities of each partner, including PSI, resulting in costs being distributed among all other activities and not requiring a budget specifically for DTK introduction.
- An uninterrupted supply of zinc and low-osmolarity ORS should be ensured.
- Basic package design should be maintained.
- Existing IEC materials can be used for scale-up without major modifications.
- 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.
- Zinc should be included with ORT in the scorecard for the Cambodia Child Survival Strategy.
- Refresher courses on diarrhea case management are needed for ODs, health center staff, and village shopkeepers.
- The zinc product to be procured by the MOH should meet all quality standards; taste should be fully masked and tested in children. For guidance, the U.S. Pharmacopeia has published the monographs about the products

that can also be found in a WHO publication of guidelines for program managers and pharmaceutical manufacturers.<sup>30</sup>

- Introduction of both low-osmolarity ORS and zinc in public sector facilities will be facilitated by the MOH updating their IMCI guidelines and training materials.
- The MOH should assess how the zinc product will be introduced in public health facilities without leaking to the private sector as is happening already with the UNICEF low-osmolarity ORS.
- Health center staff needs to be engaged in promoting the use of both products (low-osmolarity ORS and zinc) whether from the health center or purchased in the community.
- The model used by RACHA that allows MOH staff to have some mark-up from the sales of DTKs will have to be rethought once the public sector introduces zinc in their health facilities.

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<sup>30</sup> WHO, USAID, UNICEF, US Pharmacopeia, Johns Hopkins University Bloomberg School of Public Health. 2007. Production of Zinc Tablets and Zinc Oral Solutions. Guidelines for Program Managers and Pharmaceutical Manufacturers

## **Annex 1. Scientific Support for the Interventions on Low-Osmolarity ORS and Zinc**

In the early 1980s a formulation of oral rehydration salts was developed, specially designed to recover the loss of fluids and electrolytes lost during cholera. Despite the great emphasis and the input of financial support from donors to ensure its adoption by health care professionals and caregivers, its uptake was slow and with difficulties to overcome previous established patterns of provision of intravenous solution.

Reasons for the low uptake ranged from the low acceptance of the solution by children who were moderately or mildly dehydrated due to its salty taste, the observation by caretakers and physicians that stool output seemed to increase during its use, and the fact that its provision did not stop diarrhea as caregivers would have wanted. WHO continued supporting the development of other formulations that could overcome the limitations of the standard formulation, particularly the high osmolarity resulting from the level of glucose to match the level of salt. Rice-based formulations were tested but never became commercially available worldwide. At the beginning of the 1990s, WHO had decided to promote the use of recommended home fluids at an early onset of the disease, and the use of ORS in health facilities. The sugar-salt solution (SSS) that at some point was promoted was not widely recommended due to the difficulties to standardize the measures based on the size of teaspoons or caps.

In 1990, a WHO publication led to the recommendation worldwide to ban the use of antimotilics in infants, given the effects on the central nervous system and the paralysis of the intestine they produced. Although many countries followed this recommendation, other products that have milder antidiarrheal effect continued in the market. The use of unnecessary antibiotics continued increasing.

Analyzing the global situation of fluid replacement in the late 1990s, it became obvious that although most episodes of diarrhea could be managed with increased fluids at home and ORS when necessary, oral rehydration therapy (defined differently by different agencies, but in this document referred as “provision of ORS, and/or recommended home fluid, and increased fluids”) was in decline in several countries. Breastfeeding and food were being withheld more frequently contrary to recommendations, and the use of antibiotics and antidiarrheals was widespread.

However, a new formulation of ORS was seeing the light. This composition, described in the table below, reduces the levels of glucose and salt by 20% resulting in a reduction of osmolarity from 310 to 245 mOsm/L. Clinical trials with this new formulation showed that its use results in a lower stool output by 20%, a reduction of the need for intravenous therapy by 33%, a reduction in vomiting by 30%. At the same time, it was proven safe and effective in children even in cholera cases while in adults with cholera,

it is necessary to monitor the sodium level in blood during the first day of oral rehydration.

**Table.** Composition of Standard and Reduced-Osmolarity WHO ORS

	Standard WHO (1975)	Reduced-Osmolarity WHO (2002)
Glucose, mmol/L	111	75
Sodium, mEq/L	90	75
Potassium, mEq/L	20	20
Chloride, mEq/L	80	65
Citrate, mmol/L	10	10
Osmolarity, mOsm/L	311	245

Abbreviations: ORS, oral rehydration solution; WHO, World Health Organization.

#### Evidence for the use of zinc during diarrhea

Since the early 1970s-1980s there were descriptions of the increase loss of zinc during diarrhea and descriptions of zinc deficiency started to appear. The early controlled trials with therapeutic doses of zinc for acute and persistent diarrhea started in the 1980s and 1990s with individual successes. Twelve trials were conducted in acute diarrhea; 5 trials in persistent diarrhea. Age of the children ranged between 3 to 60 months and the doses of zinc used ranged between 5-45 mg/d. Each of these studies observed decreased in the duration of the diarrhea episodes. In early 1999, a meta-analysis and pooled analysis were conducted on these trials. The results showed a 15% reduction in duration of acute diarrhea; 24% lower probability of continuation (9-39%) of persistent diarrhea; and 42% reduction in treatment failure or death in persistent diarrhea<sup>31</sup>.

A community trial in Bangladesh that combined the use of the low osmolarity ORS and zinc in acute diarrhea, demonstrated that both reduced the duration (23%) and severity of illness (reduced hospitalization) and that using zinc for 10-14 days produced a 2-3 months preventive effect for subsequent episodes. The study showed a 60% reduction in overall mortality, a 50 % reduction in antibiotic use, and a 50% increase in ORS use.

Given these results, in 2004 WHO and UNICEF published a joint statement<sup>32</sup> with the following recommendations as the new standard of care:

<sup>31</sup> Zinc Investigators' Collaborative Group. AJCN 2000

<sup>32</sup> WHO/UNICEF 2004. Joint statement on clinical management of acute diarrhoea

- Prevent dehydration – with early administration of appropriate home fluids and low osmolarity ORS solution
- Continue feeding (or increase breastfeeding)
- Provide children with 20 mg per day of zinc for 10-14 days (10 mg/d for infants under 6 months old)
- Seek care from trained health worker if signs of dehydration or other symptoms (blood in stools) are present
- Use antibiotic only when appropriate (i.e. in presence of bloody diarrhea or shigellosis)
- Abstain from administering antidiarrheal drugs

Since the publication of this joint statement several countries have attempted to adopt these guidelines and make them policy. However, the lack of multiple sources of product (zinc) has been limiting the rapid adoption of zinc in case management. At present, zinc and the low osmolarity formulation of ORS are included in the WHO model Essential Medicine List (EML), and several countries are following on their own EMLs; the US Pharmacopeia has published the monographs for zinc dispersible tablets and syrups; WHO has published a guide for Program Managers to incorporate both low-osmolarity ORS and zinc; UNICEF is currently supplying the new low-osmolarity ORS; and UNICEF and USAID are engaged in collaboration to pre-qualify more manufacturers of zinc formulations.

## Annex 2: Schedule of Activities in Country

### Schedule for USAID/Abt/WHO Team Evaluation

Sunday January 28	2:30 PM	Meeting with Dr. Dainah Fajardo and Dr. Susan Jack (WHO)
Monday January 2	10:00 AM	Meeting with Kate Crawford and Charya Hen, Office of Population, Health and Nutrition, USAID
	2:45 PM	Meeting with Deputy Director Central Medical Store
	3:50 PM	Meeting with Dr. Theary Chan, RACHA Executive Director
Tuesday January 30	8:00 AM	Meeting with Dr. Michael O'leary, WHO Representative
	9:15 AM	Meeting with H.E. Eng Huot, Secretary of State, MOH
	10:30 AM	Meeting with PSI staff
Wednesday January 31	8:00 AM	Meeting with Dr. Rathmony, Director of IMCI, MOH
	9:45 AM	Meeting with Mr Hak Phirom, Business Development Manager, Diethelm Keller
	11:00 AM	Meeting with Dr. Kim An, Director of Cambodia Pediatric Association
	2:30 PM	Meeting with Ms Hara Srimuangboon, and Brian McLaughlin, PATH
	4:00 PM	Departure for airport to Siem Reap
Thursday February 1	8:00 AM	Meeting with Dr. Dy Bun Chem, PHD Director in Siem Reap
	9:00 AM	Meeting with Dr. Mak Sam Oeun, chief of OD Angkor Chum
	9:30 AM	Meeting and site visits with Dr. Thach LyKhann, RACHA Provincial Coordinator
	11:00 AM	Meeting and visit to volunteers and caregivers with Robert Kolesar, Project Director of Child Survival ARC/CRC
	2:00 PM	Interview beneficiaries of program in Pourk district
	4:00 PM	Visit Sun Quality Health Care Network providers in Siem Reap and pharmacies
Friday February 2	9:00 AM	Meeting with Dr. Yong Laun, Chief of OD Kralanh (and Referral Hospital)
	10:00 AM	Visit retail outlet in Kralanh's market
	6:00 PM	Visit to Pourk District to see MVU show
Saturday February 3	8:00 AM	Focus Group Discussions, two in Kralanh District, and two in Siem Reap town
Sunday February 4		Return to Phnom Penh

**Schedule for USAID/Abt/WHO Team Evaluation**

Monday February 5	8:00 AM	Meeting with Steve Solver, BASICS-CSMC Technical Advisor
	10:00 AM	Meeting with Dr. Thazin Oo, UNICEF Section Head of Child Survival
	12:00 Noon	Meeting with Susan Jack (WHO)
	3:00 PM	Departure to Pursat

Tuesday February 6	8:00 AM	Meeting with Mr. Klem Sokhun, PHD Director
	9:15 AM	Meeting with Dr. Sieng Kimseng, Chief of OD Sampov Meas
	10:45 AM	Meeting with Dr. Kay Dy, RACHA provincial coordinator
	1:00 PM	Visit providers and retail outlets
	3:00 PM	Departure for Phnom Penh

Wednesday February 7	Morning	Team Meeting at Hotel - Revision of draft Presentation, points of discussion
	2:30 PM	Meeting with Dr. Chan Theary, RACHA and her staff for clarifications

Thursday February 8	10:00 AM	Review of draft presentation with WHO team
	3:00 PM	Debriefing of assessment related to PSI component, with PSI Country Director, Program Director and Managers

Friday February 9	8:00 AM	Meeting at WHO for debriefing to USAID and WHO Representative
	Afternoon	Team departure

## **Annex 3: List of Persons Interviewed**

### **BASICS/Cambodia**

Dr. Steve Solter, Resident Advisor

### **Cambodian Pediatric Association**

Dr. Kim An, Director

### **DKSH Market Intelligence, Cambodia Ltd.**

Dr. Danh Engbunvuth, Business Development Product Manager

Ph. Hak Phirom, Business Development Manager

### **International Federation of Red Cross and Red Crescent Societies**

Robert Kolesar, Project Director

Integrated Child Health Project, Cambodia

### **Cambodian Red Cross**

#### **Integrated Child Health Project**

Roth Rumnrea, Operation Manager

### **Ministry of Health**

Prof. Eng Huot, Secretary of State for Health

Dr. Hong Rathmoney, Director IMCI

Dr. Ma Sophann, Deputy Director Central Medical Stores (CMS)

### **Ministry of Health Pursat Province**

Mr. Ung Sophane, PHD Deputy Director

Dr. Sieng Kimseng, Chief of Sampov Meas OD

### **Ministry of Health Siem Reap Province**

Dr. Dy Bun Chem, PHD Director

Dr. Kros Sarath, Deputy Director of Provincial Health Department

Dr. Yong Laun, Chief Klahan OD

Dr. Eng Kim Nsan, Deputy Director, Angkor Chum OD

### **PATH**

Brian McLaughlin, Country Director

Hara Srimuangboan, Program Director

**Population Services International Cambodia**

Andrew Boner, Country Representative

Jacqueline Devine, Deputy Country Representative

Uth Sophal, Manager Global Fund Projects

**Reproductive and Child Health Alliance (RACHA)**

Chan Theary, Executive Director

Dr. Sun Nasy, Deputy Executive Director

Dr. Thach Ly Khann, Provincial Coordinator Siem Reap Province

Dr. Koy Dy, Provincial Coordinator Pursat

**UNICEF Cambodia**

Dr. Thazin Oo, Section Head Child Survival

Rasoka Thor, Project Officer, Child Survival

**USAID Cambodia**

Kate Crawford, PHN Director

Dr. Charya Hen, Family Health Team Leader

Pamela Tiechman, HIV/AIDS Senior Technical Advisor

**World health Organizaiton**

Dr. Michael O'Leary, Representative Cambodia



**Moderator to say:** Let's talk about what mothers (families if more people involved) do when a young child gets diarrhea.

**1. General practices on diarrhea treatment (4 minutes)**

**1.1** What do caretakers/mothers do when their children get diarrhea?"

**Probe:** What is the first thing that caretakers do? What is the next thing they do? List all and then go one by one.

**2. Oral Rehydration Salts (5 minutes) Please, distinguish ORS (sachet) from ORT – which includes home fluids and soups and porridges – do not use both terms interchangeably.**

**2.1** When women use ORS for diarrhea, where do they get it? How long do they give it for?

**2.2** Do they find that the ORS helps the child? How? Explain. If they say it does not help, please, explain why not?

**2.3** Does the ORS decrease diarrhea in children?

**2.4** Are there cases when children who have diarrhea don't need ORS? Explain.

**2.5** Is there anything that mothers don't like about giving their child ORS?

**3. OraselKIT® (10 minutes)**

**3.1** Have you ever heard of Oraselkit? (If yes) How did you first hear about the OraselKIT?

**3.2** What does the Orasel kit consist of?

**3.3** *If tablets are mentioned:* Do you know what these tablets are?

**3.4** Do mothers in your community give these tablets when their child has diarrhea?

**Probe:** Do they know that zinc tablets dissolve in water – do they like the taste, is it easy to give to the young child?

**3.5** *(If yes)* How do mothers (or you if someone had the personal experience) give their child these tablets? How many per day? For how many days?

**3.6** *(if they stop when diarrhea stops, ask)* what do they do with the rest of tablets?

**Probe:** Have you ever heard of any problems giving the tablets to young children?

**3.7** Do mothers like that the tablets come with ORS sachets?

**3.8** Do mothers (you, if someone had personal experience) use the two sachets of ORS?

**3.9** Would mothers (you) prefer to have more than two ORS?

**Probe:** Would mothers prefer to have the zinc tablets alone or always with the ORS? Please explain.

**3.10** Do mothers find that using ORASEL kit helps the child with diarrhea? Could you explain why you think so? Or, don't think so?

**3.11** How did you first hear about the ORASEL Kit?

**3.12** Do mothers in your community buy this kit?

**3.13** Where can you buy this kit in your community? Is the kit always available if you needed?

**3.14** What do mothers think about the price of the kit? Is it affordable?

**3.15** Would mothers prefer to buy only the tablets and get the ORS in public health facilities? (or do they like it all together)?

**3.16** Would you buy the Orasel Kit the next time your child has diarrhea? Why or why not?

#### ***4. Use of other medicines (syrups, injections, other tablets)***

**4.1** How about other medicines; do mothers give the child any other kind of medicine?

**4.2** What do they give them? What are examples of medicines for diarrhea? Differentiate if they are referring to Western-type remedies or traditional herbs or remedies;

**4.3** Where do people get these medicines?

**4.5** How much of these medicines do they usually give? And, for how long?

**4.6** What is good about these medicines?

**4.7** How much does it cost to purchase these medicines?

**4.8** Is there anything you don't like about giving your child medicines?

#### ***5. Wrap-up (5 minutes)***

We have discussed a lot of issues about diarrhea in young children today and we want to thank you for your participation. I have really learned a lot. This information will help us to plan treatment programs for young children in your community. Before we close, do you have any questions for us?

***Thank the participants***

## **Annex 5: Notes from Focus Group Discussions in Kralhan District**

Date 3-2-2007

Facilitator: Mr. Soen Mao (RACHA)

Participants: 26

Observers : Dr. Patricia and Dr. Dainah

Translator : Dr. Thach Lykhann

Notetaker: Ky Sam at

Place : San than village (Kralhn District)

### **Group 1**

**Introduction:** self induction, request for ideas and time

Self introduction of participants of number of children and the age of youngest child

### **Part 1: General information**

#### **Q1: What do caretakers/mothers do when their children get diarrhea?**

Various women talked: Continues breast feeding, gives water, provides food, goes to health center Sambour, give to drink Orasel, take zinc tablet, give juice of coconut , porridge, ORS, go to see traditional healer, take traditional medicine and burn the abdomen.

A woman said that when she was young she used to boil a string and a nail and drink the water. Another said that before Orasel kit they used to take the children to a local nurse – she would give them medicine and injection. *“We also get Oralyte in health center”*. They know also other kinds of Oralyte that they sell in shops. When Oralyte is not available, they use water from coconut or porridge.

### **Part 2: ORS [the questions were presented for Oralyte, the brand the health center used]**

#### **Q2: Do you know or heard ORS? Where do you find it? How to use it?**

Yes [they nod affirmatively], it's used when the children get diarrhea [Oralyte]. They can get it at health center and at shop sellers. *“One package mixes with 1 liter of water”*. At the question of how you measure a liter, someone said that they use a can of milk to measure – a liter is three cans of milk.

#### **Q3: After mixing, how long can you keep it?**

*“After mixing, it can keep 24 hours”*.

**Q4 : Do you think ORS can decrease the duration of diarrhea?**

Yes, but some children do not like it [oralyte], because it is not sweet, it's salty. [Someone joked: *"if it were me, I'll drink it all"*]

**Q5: When is it that children do not need ORS?**

"When they got 'light' diarrhea". Another woman says: *"Children don't need it only when they do not have diarrhea"*.

**Part 3: Orasel kit**

**Q6: Do you know or have heard of Orasel?**

*"Yes, I heard and used it also"*. [Someone adds: *"children like the tablet because it's sweet"*]  
Another woman repeats: *"I hear, I see, I use"* [women nod approvingly and laugh]

**Q7: What does the Orasel package consist of?**

*"In one package of Orasel there are 2 ORS, 10 tablets of zinc and the instruction"*. *"Yes, the instructions"*, shout the rest.[they laugh]

**Q8: Do you know the name of the tablet?**

*"Yes, it's called 'zincsa' [sounds 'zanza'] zinc"*[points to the corrugated material of the house next to them]. *"It can dissolve in water and in the mother's milk"*, volunteers someone.

**Q9: Do you know how to give the zinc tablet to the children? How many per day and how long?**

*"Put the zinc in the water or breast milk"* repeats the woman.

*"Give one tablet per day and for 10 days if the child is six months age or over. If the child is under 6 months age, half of tablet per day"*

A woman adds: *"children can eat all the tablets if left outside because of the sweet taste"*  
[women laugh]

**Q10: If the child stops diarrhea in two days, what do you do with the rest of the tablets of zinc?**

*"Give the zinc tablet to the child until 10 days"*.

**Why?**

*"Because the zinc tablets can protect the children from diarrhea for 2-3 months"*. One woman who had strong position among the others states: *"if diarrhea stops one should continue giving zinc;" "if we stop in 2 days and we don't continue, diarrhea will happen again. If we continue, we can prevent diarrhea."*

One woman disagreed: she gave the 10 tablets but the child continued with diarrhea [I didn't get whether the child had another episode or the same continued]

**Q11: do you ever hear the children have any problem with taking zinc?**

"No". [Women talk to each other and conclude that nobody has seen a child refusing to take the tablet]

**Q12: Do you give zinc and ORS?**

"Yes, I dissolve it with ORS" –[it seemed as if the question was understood as mixing zinc with ORS, but it pertained to whether both were being used. Later we learned that they are being taught to dissolve zinc in ORS].. "And also with breast milk" said another woman.

**Q13: Do you give the children the 2 packages of ORS?**

"Yes. When ORS has more than 24 hours I throw it and prepare another one."

"I think we need more packages of ORS" said one woman. "Yes, I need more than 2". Another person said: "If I need more than two, I go to the shop and buy another Orasel kit. I think 2 are adequate". Others did not intervene.

**Q14: Do you need only the zinc tablet or only ORS?**

"No, we need both". "Both, because zinc treats diarrhea but does not provide water to the child".

**So, do you need only ORS and not zinc?**

"No, both". "When the children received zinc it seemed they are hungry. They eat more".

**Q16: Where did you hear from Orasel kit?**

"Through RACHA staff, shop sellers and comedy for health in the temple".

**How much does it cost?**

"1500 riel".

**Is it expensive? Do you think it is expensive?**

"No" said the majority. Then, one reacted and said "well, if you are asking and can reduce the price, why don't... let's say... 1,200?" [It was as if she understood they should be asking for a price reduction] Others said it was fine.

**Q17: Do you think Orasel can help the children with diarrhea?**

"Yes, for the children with not severe diarrhea". Another woman says: "When diarrhea is severe, Orasel is not enough" "One has to take the child to the health center"

**How do you know when a diarrhea is severe?**

"The children get diarrhea with fever, vomiting, can not eat or suck the mother, has 'candida bucal'-white in the mouth- bloody stool and 3 days does not stop". All these signs were presented for cases when the child should be taken to the health center.

**Q18: You have discussed a lot on orasel kit, but when your children get diarrhea next time will you buy Orasel kit and give to your children?.**

*"Yes! I will buy".*

**Part 4 : other used of traditional medicine and modern medicine.**

**Q19: Do you ever use the other medicine such as traditional or modern medicine?**

*"Yes, I did in the past". "I used to buy the modern medicine such as charcoal and patardium [?] at shop. And sometimes find the traditional medicine by myself or at the traditional healer".*

**Q20 : Do you think those modern medicine are good?**

*"No, now we know they are not good and I stopped using them as I used to before".*

Thanks for your time and your participation.

**Have you got any comment or question?**

*"Yes, we would like to have good medicines and adequate treatment at the health center". "So, if we don't find it here (the shop) we will find it there"*

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**Date 3-2-2007**

**Facilitator: Mr. Soen Mao**

**Participants: 20**

**Observer : Dr. Patricia and Dr. Dainah**

**Translator : Dr. Thach lykhann**

**Note taker : Ky Sam at**

**Place : San than village**

**Group 2**

**Introduction:** self induction, request for ideas and time

Self introduction of participants of number of children and the age of the youngest child. There were two women with 11 children, two with only one, one grandmother, others with 3-5.

**Part 1: General information**

**Q1: What do caretakers/mothers do when their children get diarrhea?**

Various: They used to do something else but now with Oralyte and Orasel they give fluids, continue breastfeeding, give water, provide food, go to health center Sambour, drink Orasel or ORS, give water, porridge, go to see traditional healer, give traditional medicine. At present, people boil the water. In the past, one mentions she used herbs that boiled in water and drink the water.

## **Part 2: ORS**

### **Q2: Do you know or heard ORS? Where do you find it? How to use it?**

*"Yes, it is used when the children get diarrhea". "We can get Orasel at the shop".* When asked about Oralyte, they said they get it at health center. One package mixes with 1 liter of water.

### **Q3: After mixing, how long can you keep it?**

*"After mixing, ORS lasts 24 hours".*

### **Q4 : Do you think ORS can decrease the duration of diarrhea?**

*"Yes"* an elderly woman responded. She said she has heard that Orasel reduces duration of diarrhea. Moderator goes back to Oralyte. People clarifies, they can get Oralyte in health center, and Orasel in shop.

One woman says that Oralyte gives more diarrhea, while other woman said that after giving Orasel children stop diarrhea.

One woman said that her child refuses to drink Oralyte.

### **Do you know why the children do not like ORS?**

A different woman replies: Oralyte prolongs diarrhea. Others said, *"also, because of the taste (salty), afraid to have more diarrhea and prolong the duration of diarrhea"*.

### **Q5: When the children do not need ORS?**

When they got light (mild) diarrhea or do not have diarrhea.

## **Part 3: Orasel kit**

### **Q6: Do you know or heard Orasel?**

*"Yes, I heard and used it also"*. Another woman, a grandmother, says that she buys for her grandson.

### **Q7: What does the Orasel consist of?**

People respond: *"In one package of Orasel there are 2 ORS, 10 tablets of zinc and the instruction"*. As in the previous group, the insert is mentioned with emphasis.

### **Q8: Do you know the name of the tablet?**

*"Yes, it's called zinc"* (zancsa) and respondents point out to the rough, the corrugated metal that is used for roofs and walls.

*"It can dissolve in the water and in the mother's milk"* says one woman.

### **Q9: Do you know how to give the zinc tablet to the children? How many per day and how long?**

One woman says: *"Dissolve the zinc in the water or breast milk"*.

Another woman states incorrectly: *"Give one tablet per day and for 10 days if the child is 2 years old age or over"*. *"If the child is under 2 years old, give half of tablet per day"*.

[This misconception was not corrected by other women so moderator probes again and the response is the same, but usually from the same woman.]

**Q10: If the child stop diarrhea in two days, what do you do with the rest of tablets of zinc?** Women responded that it should be given until day 10. One mother said that the rest should be thrown away – [we think she didn't understand we were talking about the tablets but about the Orasel because ORS and Orasel were being used interchangeably during session, and it was obvious that women call Orasel to the sachets of ORS in package while they call zinc, zinc].

Another woman said that she gave her child the ten days but threw the other five tablets away = when asked more, she has also understood that her child (who was a two year old) only needed half a tablet – so she completed ten days but threw away the rest.

**Q11: did you ever hear that children have any problem with zinc?**

*"No. The zinc tablet is easy to give to children"*. [Women would make the gesture of dissolving it and giving it to drink and a grandmother said she has seen her grandchildren drinking it with no problem]

**Q12: Do you provide zinc with ORS?**

*"Yes, I give it with a tablespoon on ORS and also with breast milk"*. [Again, the question was interpreted as what you dissolve the zinc with instead of whether they use the two products. However, it confirms what we heard in the other group that people have learned to dissolve it with the solution of ORS]

**Q13: Do you give the children the 2 package of ORS?**

*"Yes"*.

**Q14: Do you think you need more than 2 packages of ORS?**

*"Yes, I need more than 2"*. Again, a woman wanted more than two packages of 'orasef' (ORS) Others thought two were enough.

**Q15: Do you need only the zinc tablet or only ORS?**

*"No, we need both"*. *"We need more Orasel(ORS) to keep for next time"*.

Other women said that they need more of both, ORS and zinc, because together have the good effect.

**Q16: How do you know Orasel kit?**

Through RACHA staff, shop sellers and comedy for health.

**How much does it cost?**

*1500 riel.*

**Is it expensive?**

*"No, it is reasonable".*

**Q18: You have discussed a lot on orasel kit, but, when your children get diarrhea next time will you buy Orasel kit and give to your children?**

*"Yes, I will buy"* several women answered.

**Part 4: other use of traditional medicine and modern medicine.**

**Q19: Do you ever use the other medicine such as traditional or modern medicine?**

Yes I did. In the past, I used to buy the modern medicine such as Tetracycline, Ofloxacin (opool) Aureomycin, Cotrimoxazole and paratardium (bactrim) at shop.

**Q20: Do you think those modern medicine are good?**

*"No"*, they say they are no good for children. One woman says that she just follows instructions from shopkeepers: *"The medicines that shops have are very good."*

**Q17: Do you think Orasel can help the children with diarrhea?**

*"Yes, for the children with not severe diarrhea".*

**Do you know the sign of severe diarrhea?**

Women mentioned that those are children with diarrhea with fever, vomiting, can not eat or suck the mother, bloody stool and 3 days could not stop.

**Thank for your time and your participation. Have you got any comment or question?**

*"Yes, we would like to have Orasel free if possible".* [Everybody laughs]

Dr. Thach Ly Khan explained about new ORS in health centers; he also corrects the message of using zinc tablet ½ for children under six months of age and 1 tablet for children from 6 months and over. He explained also the dangerous of using modern medicine and if they have any problem please go to health center.

## Annex 6: Notes from Focus Group Discussion Siem Reap

### Characteristics of Focus Group Discussions Bakong District, Siem Reap Province, Cambodia February 3, 2007

	Focus Group 1	Focus Group 2
<b>Number of Participants</b>	14 women	19 women
<b>Target Group</b>	Mothers of children under 5	Mothers of children under 5
<b>Location</b>	Pongror Kantrang Commune	Pongror Kantrang Commune
<b>Language</b>	Khmer	Khmer
<b>Date of Group</b>	3 February	3 February
<b>Duration</b>	55 minutes	45 minutes

The two focus groups which occurred on February 3, 2007 were moderated by a male RACHA staff person who had not received previous training in conducting focus group discussions. The RACHA note-taker was similarly untrained and often forgot to take notes during the course of the two discussions. Hence, the transcript that follows has been fleshed out from the rough written notes taken by Malia Boggs.

The focus group discussion guide was developed by the assessment team and then translated into Khmer by RACHA staff (see Appendix X). The discussion began after the moderator did introductions, went over the ground rules, stressed confidentiality, and obtained the consent of participants. The first discussion commenced at 8:15 a.m.

Moderator: What do caretakers/mothers do when their children get diarrhea?

Participant 1: Increase breastfeeding.

Participant 2: Drink more boiled water.

Participant 3: Feed the child more often and if the diarrhea doesn't stop, go to the health center.

Moderator: Who uses the diarrhea treatment kit?

Participant 1: When a child has diarrhea, we get it from someone who sells it in the village. One sachet of ORS is mixed with 1 liter of water. This is taken with a tablet for 10 days.

Participant 2: Sometimes Oralyte from the health center is tough to take. Maybe it's used for about 3 days.

Participant 3: We try to feed the child often with Oralyte but sometimes the child doesn't take it.

Moderator: It sounds like a few of you have heard of the DTK, but no one has tried it yet.

Participant 1: Women know the DTK contains 10 tablets of zinc, 2 sachets of ORS, and they give gifts too. You take one tablet per day, dilute it in water or breastmilk and give it to the child.

Participant 2: Children like the taste and want more so it's easy to give to children.

Participant 3: The shopkeeper told me to use all ten tablets. I use the tablets even in diarrhea stops.

Moderator: Are two sachets [of ORS] in the DTK enough?

Participant: When there are two, it's enough to stop the child's diarrhea.

Participant: You should add more [sachets].

Moderator: How would you feel if they are provided separately?

Participant: It doesn't matter as long as we can access treatment for the child.

Moderator: How did you hear about the Orasel Kit?

Participants: radio, TV, shop owners informed us.

Moderator: What about the price?

Participant: 1500 R.

Participant: It doesn't matter about the price but what matters is the child's health

Participant: 1500 isn't very expensive.

Participant: What's important is to cure child.

Participant: 500 R would be best price.

Participant: If we could lower the price, it would be good.

Moderator: How about other medicines? Do mothers give the child any other kind of medicine?

Participant: I used to treat with antibiotics.

Moderator: Before we have the DTK, what would you use to treat diarrhea?

Participant: Antibiotics but I don't know what type. The drug seller would just mix them together in a cocktail treatment. I'd use this for 3 days to 1 week.

Participant: Antibiotics maybe aren't good because I don't know what kind of treatment a cocktail is.

Participant: I haven't used the Orasel Kit because my child hasn't had diarrhea.

Moderator: Compared with these other medicines, what do you think of the Orasel Kit?

Participant: The Orasel Kit is better because it is effective and easy to use. I will continue to use it the next time my child has diarrhea.

Participant: The box is "beautiful" and good because there is a small child on it.

Moderator: In the future, if you could go to the health center or buy the kit at the village shop, where would you like to go?

Participant: I would like to go to the nearest outlet for the Orasel Kit. The health center is very close.

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The second focus group discussion commenced at 9:20 a.m. with mothers living in a nearby community.

Moderator: What do you do when your child has diarrhea?

Participant: Increase breastfeeding.

Participant: Give more fluids.

Participant: Give Oralyte or Orasel and maybe other food like porridge.

Participant: I feed [her] boiled water and more Orasel.

Moderator: Where do you get the Orasel?

Participant: In the village, we have Orasel.

Participant: Shopkeepers explain how to mix Orasel and give it to the child with boiled water. You boil water, mix one liter and put Oralyte inside.

Participant: With Oralyte, my child doesn't like taste so won't take it.

Participant: The kit can rehydrate and reduce diarrhea. All children need Oralyte when they have diarrhea.

Moderator: Tell us more about Oralyte.

Participant: It's not easy to take, kids refuse, it smells and doesn't taste good. If it was sweeter, children would take it.

Moderator: Who has heard about Orasel?

Participants: [Most of the women raise their hands and say yes.] From TV, radio, shopkeepers. [Two village shops in this community sell the Orasel Kit.]

Participant: It has 2 sachets of ORS, 10 tablets and instructions.

Participant: You should use it when your child first has diarrhea and continue for 10 days. [Only three of the women indicate they have used the DTK. When asked why not, they say it's because their children don't have diarrhea.]

Participant: I give ORS, even when my child is vomiting and give one table of zinc per day.

Participant: The current kit is fine with both ORS and zinc inside the pack. Our children like the sweet taste.

Moderator: Are two sachets of Orasel enough for treatment?

Participant: My child stops diarrhea with two [sachets].

Participant: It would be good to add 2 more sachets for the same price.

Participant: I give my child Orasel for 7 days.

Moderator: What do you think of the price?

Participant: It's affordable because there are 2 sachets and zinc.

Participant: But it would be good to add more packets of ORS.

Participant: I will use it again and will buy if my child has diarrhea.

Moderator: What did you do before the Orasel Kit?

Participant: I bought from private provider and then the hospital. I used Bactrin and Oreo to treat diarrhea and cotrimoxizol mixed with some other drugs (cocktail treatment) for 3 days. If the child didn't get better, I'd go back again.

Participant: I went to Angkor Children's Hospital, not a private provider.

[Three women have used the Orasel Kit for ten days because the village shop keeper instructed them to do so. These women did not use antibiotics to treat their child's diarrhea.]

Moderator: In the future, if you could go to the health center or buy the kit at the village shop, where would you like to go?

Participant: I would prefer to go to the health center because sometimes children have diarrhea and other illnesses too.

Participant: Yes, the health center is closest, only 500 meters from here.

## Annex 7: Project Logframe

Narrative Summary	Indicator	Means of Verification	Assumptions and Risk
<p><b>Goal:</b> Improve the health of children under five in Cambodia.</p>	Decrease in infant and child mortality and morbidity due to diarrhea disease.	Ministry of Health	<ul style="list-style-type: none"> <li>▪ Political stability</li> <li>▪ GOC data collection</li> </ul>
<p><b>Purpose:</b> To improve the management of diarrheal disease in children under five through increased use Diarrhea Treatment Kit (DTK) in Siem Reap and Pursat.</p> <p>(Note: The DTK includes a 10-day course of zinc tablets and 2 sachets of ORS.)</p>	<ol style="list-style-type: none"> <li>1. Sales of 15,000 DTKs in Siem Reap and Pursat;</li> <li>2. 10% of caregivers for children under five report having used DTK the last time their child had a diarrhea episode;</li> </ol>	Sales report (MIS); End of Project (EoP) survey	<ul style="list-style-type: none"> <li>• MoH supports project</li> <li>• RACHA can effectively implement pilot</li> <li>• Good collaboration and buy in from providers, commercial sector and other NGOs</li> <li>• Buy in from mothers of children under five</li> </ul>
<p><b>Output:</b></p> <ol style="list-style-type: none"> <li>1. Create access to the DTK among caregivers of children under five in Siem Reap and Pursat.</li> </ol>	<ol style="list-style-type: none"> <li>1.1 % of caregivers who can identify a source for obtaining a DTK within 20 minutes of their home</li> </ol>	EoP Survey	<ul style="list-style-type: none"> <li>▪ Providers, commercial sector and NGOs support ORS and DTKs.</li> <li>▪ Outlets willing to sell at recommended price.</li> </ul>
<ol style="list-style-type: none"> <li>2. Increase knowledge of the DTK among caregivers of children under five in Siem Reap and Pursat.</li> <li>3. Increase belief in the benefits of using zinc tablets and ORS to manage diarrhea in under-5 children.</li> </ol>	<ol style="list-style-type: none"> <li>2.1 % of caregivers who administer the full 10 day course of zinc tablets and use ORS;</li> <li>2.2 % of caregivers who can recall the DTK brand name.</li> <li>3.1 % of caregivers of children under five in Siem Reap and Pursat who believe that zinc tablets are an effective treatment for diarrhea;</li> <li>3.2 % of caregivers of children under five in Siem Reap and Pursat who believe that a 10-day course of zinc treatments will prevent future diarrhea episodes;</li> <li>3.3 % of caregivers who believe that giving ORS is necessary when a child has diarrhea.</li> </ol>	<p>PSI reports; NGO reports; RACHA reports; EoP Survey.</p> <p>PSI reports; EoP Survey</p>	<ul style="list-style-type: none"> <li>▪ Key persons from partner NGOs and government stay in place</li> </ul>

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