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A PUBLIC-PRIVATE PARTNERSHIP FOR THE INTRODUCTION OF ZINC FOR DIARRHEA TREATMENT IN BENIN

RESULTS AND LESSONS LEARNED

PROGRAM CONTEXT

Benin, located in western Africa between Nigeria and Togo on the Gulf of Benin, is territorially one of the smaller countries in Africa, with an area of 112,620 sq km and a population of 9.03 million. It is one of the poorest and least developed countries of the world, ranking 161/182 in the United Nations' Human Development Index for 2009 (UN 2009). Sixty-six percent of the population resides in rural areas.

Overall health indicators are poor: there is a low life expectancy of 56 years and high infant and child mortality. In 2007, Benin had an infant mortality rate of 78 per 1,000 live births, and an under-five mortality rate of 123 per 1,000 live births (UNICEF 2008). Nine percent of children under five years of age and 14 percent of children 6–23 months had diarrhea in the two weeks preceding the 2006 Benin Demographic and Health Survey (BDHS) (Institut National de la Statistique et de l'Analyse Économique 2007). Approximately 13 percent of all childhood deaths in Benin are diarrhea-related (Black 2010).

The 2006 BDHS revealed that 71 percent of caregivers knew about oral rehydration salts/solution (ORS) yet only 23 percent had actually used ORS as a treatment for dehydration when their child had diarrhea. Thirty percent of caregivers provided no treatment to their children with diarrhea.

POUZN
Point-of-use Safe Water & Zinc Saving Children's Lives

CountryBrief

Of the 70 percent who did treat, 42 percent treated at home, 30 percent sought treatment advice from public sector clinics, and 27 percent sought treatment from private sector sources (13 percent from private clinics and 14 percent from pharmacies).

An analysis of the 2006 BDHS data (Table 1) revealed that many caregivers who went to either public and private sector providers reported using pills and/or syrups[1] to treat pediatric diarrhea, but this was more common among those who sought treatment from private sector sources. Caregivers treating at home most frequently used an unknown pill or syrup to treat their child (32 percent) or a home/herbal remedy (30 percent). ORS was available to caregivers through both public sector clinics and private sector outlets at the time of this survey. Caregivers who sought treatment in the public sector were more likely to use ORS (65 percent) than those who went to private sector clinics (31 percent) or pharmacies (16 percent).

[1] Many of these pills and syrups are inappropriate treatments for pediatric diarrheas. Unless the child had dysentery, the recommended treatment at the time was ORS/recommended home-prepared rehydration solution/increased fluids.

In 2007 the USAID Mission to Benin invited USAID's Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project, implemented by Abt Associates and Population Services International (PSI), to introduce pediatric zinc in Benin through private sector channels. As mentioned above, the public sector is an important source of care during diarrhea episodes. As a result, the POUZN program was designed and implemented in close collaboration with Benin's public sector with special attention paid to assuring supply in public sector facilities and training of those providers. At the time of program design, zinc was virtually unknown in Benin. The Government of Benin, particularly the Ministry of Health and its Department of Family Health, supported its introduction, and had taken two initial steps to support zinc introduction: revising its diarrhea treatment protocols to include zinc and incorporating those new protocols into Integrated Management of Childhood Illness (IMCI) training modules and the medical training curriculum for doctors, nurses, and midwives. Nevertheless, zinc was not available in either public sector clinics or

TABLE 1: TYPES OF PEDIATRIC DIARRHEA TREATMENT, BY SOURCE OF CARE

Treatment (% of total cases)*	Home only (42%)	Public Sector Clinic (30%)	Private Clinic (13%)	Pharmacy (14%)
Unknown pill/syrup	32%	37%	52%	63%
Recommended home solution	15%	14%	9%	4%
ORS	26%	65%	31%	16%
Home remedy/ herbal	30%	7%	8%	7%

Source: BDHS 2006
* Numbers do not add to 100 percent because respondent may have used more than one treatment. Table does not include injection, intravenous, or other treatments.

private sector outlets until imported and distributed by the POUZN program. Project personnel worked closely with the Ministry to ensure registration of zinc as a treatment product and facilitate its placement on the Essential Medicines List.

The POUZN project's initial commercial marketing efforts were centered around seven major urban and surrounding peri-urban areas located in the following departments: Alibori, Atacora, Atlantique, Bourgou, Collines, Donga, and Zou, where PSI was already implementing a social marketing program, and the capital area of Cotonou. Both public and private sector programs have now been implemented in the targeted departments covering 70 percent of the population[2], and POUZN has gradually extended its marketing efforts into the remaining four departments. The following sections of this brief describe the zinc diarrhea treatment program, research results and programmatic lessons learned.

PROGRAM GOALS

- **To increase access** to pediatric zinc among caregivers of children under five in Benin, by introducing a diarrhea treatment kit, "OraselZinc," nationwide in both private and public sector outlets.
- **To improve caregiver knowledge and treatment** of childhood diarrhea so that caregivers provide oral rehydration therapy together with zinc as the first-line treatment for uncomplicated diarrhea.
- **To improve both public and private providers' knowledge and treatment** of childhood diarrhea so that providers recommend pediatric zinc, along with oral rehydration, as the first-line treatment for uncomplicated diarrhea.

TIMELINE

The POUZN program has been implemented in three phases.

At the end of March 2008, PSI, with the financial support of UNICEF, launched OraselZinc in two pilot departments, Zou and Collines, where it was sold through public sector health centers.

Phase II began in July 2008, when the POUZN project launched OraselZinc into the seven target departments and Cotonou through both pharmaceutical (public and private sector) and commercial fast-moving consumer goods (FMCG) distribution networks.

Phase III began in late 2009, as POUZN expanded the marketing of OraselZinc to other departments by establishing a new partnership with FECECAM [Faitière des Caisses d'Epargne et de Crédits Agricoles Mutuel], a women's microcredit group, and by implementing a new management strategy, which decentralized supervision of distribution staff and promotional assistants throughout the country and supported the scale-up to all 12 departments.

Launch of the kit built upon several years of PSI marketing its ORS brand, Orasel. PSI's Orasel marketing program ran from 1995 through 2008, when the new OraselZinc kit was introduced, with PSI serving as the source of supply for both public and private sectors for both Orasel and OraselZinc.

[2] The POUZN project concentrated commercial marketing efforts in targeted communes in these departments representing about 27 percent of the total population; however, OraselZinc is available throughout each department.

Orasel was sold in both a three-sachet package as well as individual sachets and distributed through both pharmaceutical and commercial wholesale channels. During the period 2000–2005, Orasel sales ranged between 1.5 and 3 million sachets annually, but declined thereafter. The POUZN communication campaign encouraged those who had previously used Orasel (23 percent at the time of the 2006 BDHS) to now use OraselZinc. OraselZinc was aggressively introduced into the marketplace to meet the treatment needs of the country during diarrhea seasons, which run from May through August and again from October through November.

PROGRAM COMPONENTS

Product: OraselZinc Diarrhea Treatment Kit. In Benin, the POUZN project added a treatment course of zinc to the Orasel package that PSI was already marketing, thus creating an enhanced diarrhea treatment product. The kit contains 10 20mg tablets of zinc sulfate and two sachets of orange flavored low osmolarity ORS (this new ORS has lower levels of both glucose and sodium chloride) designed to treat childhood diarrhea in accordance with the diarrhea management protocols outlined by the World Health Organization (WHO)/ UNICEF in 2004. The zinc tablets were procured by PSI from Nutriset in France and the ORS from a supplier in India.

Distribution: Ensuring Access to and Availability of OraselZinc. The POUZN program built upon the existing PSI distribution system by working actively with the three private pharmacy wholesalers and one government pharmacy wholesaler, Centrale d'Achat des Medicaments Essentials (CAMÉ),[3] to distribute and market the kit. These four wholesalers supply all of the 174 private commercial pharmacies and their 60 rural counterparts and the 460 public health clinic pharmacies throughout the country. In addition, the team worked with 10 commercial wholesalers to market OraselZinc through the commercial distribution channels for FMCGs, such as kiosks, drug vendors, retail shops, and other informal sector sales outlets. Since inception, 50 percent of OraselZinc stocks have been purchased by CAMÉ, 23 percent by commercial wholesalers, and 22 percent by the pharmaceutical wholesalers; 4 percent of stocks have been purchased by humanitarian institutions for their intermittent emergency requirements. New community-based sales channels are currently marketing about 1.4 percent of the stocks.

The project conducted a national retail coverage survey of both rural villages and urban population centers in November 2009 that indicated that overall distribution of OraselZinc had improved from 36 percent in December 2008 to 58 percent by November 2009 (1,230 outlets surveyed

[3] CAMÉ works in the same manner as private wholesalers, purchasing the kit from PSI at a wholesale price and selling to consumers at a full cost recovery price. It does not provide the kit to public sector clients at a subsidized or reduced price.

Promotional events reach caregivers in peri-urban and rural areas.

nationwide), with coverage[4] in eight of the 12 departments exceeding 70 percent. Moreover, all 460 public sector clinic pharmacies were carrying the product. The survey also looked into how the kit was being sold and found that 96 percent of the OraselZinc was sold as a complete kit; however, 17 percent of the outlets had sold zinc separately out of the kit and 23 percent had sold ORS alone. The retailers selling the two products separately tended to be informal sector outlets – drug vendors, small merchants, community workers, and market traders.

[4] Coverage is defined as at least one outlet selling the product in each enumeration area. Outlets included boutiques, public and private clinics, pharmacies, and pharmacy depots.

Price: OraselZinc is sold in all public and private outlets at the full cost recovery price of CFA 450 (US$0.90) to ensure sustainability of supply. This price includes product and packaging as well as wholesale and retail profit margins, but no promotion or management costs. During the UNICEF-funded pilot, the kit was sold at a subsidized price of CFA 100 ($0.20) through public health clinics in Zou and Collines departments, but these subsidized sales ended in May 2009 with the termination of the pilot. POUZN's full cost recovery-priced kit was launched in July 2008 into the seven targeted departments and Cotonou. The price of the kit was based on formative research conducted prior to the launch and was set at a price comparable to other diarrhea treatment products already on the market.

Promotion: Improving Caregivers' Knowledge and Practice. Consumer knowledge and previous use of Orasel considerably assisted the introduction of the OraselZinc kit. A PSI household survey, conducted in December 2007 in the Zou and Collines departments, indicated that 99 percent of respondents knew that Orasel was effective for the prevention of dehydration in children with diarrhea and 51 percent of respondents having a child with diarrhea during the previous two weeks had used Orasel to treat the diarrhea. The POUZN program built on this awareness and previous use behaviors.

POUZN implemented a two pronged communication strategy employing both mass media and community-based channels.

Interpersonal Communication: In order to expand knowledge and promote use of OraselZinc, the POUZN team produced a set of promotional and educational

materials tailored to local knowledge and literacy levels, for use during community-based interpersonal communication (IPC) activities and at points of sale. These included flyers, posters, point-of-sale stickers, brochures, banners, and folders with scientific information for providers and pharmacists. All materials and messages were pretested via focus group discussions with the appropriate target groups. The project also engaged 13 nongovernmental organizations (NGOs) already trained in community development and outreach skills by PSI's social marketing project and provided 90 of their community agents with additional training in diarrhea prevention and treatment. To date, the POUZN project has trained more than 1,200 community-based agents to educate primarily rural populations about OraselZinc.

Mass media: Mass media efforts utilized national radio networks and 13 community radio partners to reach households living in the target areas. Two diarrhea treatment radio spots (one branded and one generic, which were given equal air time) were developed to promote the correct use of ORS and zinc for the treatment of all childhood diarrheas. These were aired from March to December 2009 to coincide with the two diarrhea seasons and are running again March to December 2010. The team produced briefs on diarrhea treatment from which the program's community radio partners – with the ability to reach deep into the rural areas – prepared community radio messages, special interviews, and other media programs specific to zinc treatment. These community radio activities supplemented national radio broadcasts of demand-creation messages.

A number of television programs on general diarrhea treatment issues were also aired but brand-specific television advertising did not begin until June 2010.

POUZN Provides Emergency Response

In late 2008, the POUZN team worked with the Ministry of Health and partner NGOs to address cholera outbreaks and widespread flooding in Benin by coordinating community-based educational activities, doubling mass media messages on diarrhea prevention and treatment, and sharing communications materials including posters and flyers in the most-affected neighborhoods. These efforts strengthened exposure to OraselZinc and positioned POUZN as a leader in diarrhea prevention and treatment in Benin.

IMPROVING PROVIDER KNOWLEDGE AND PRACTICE

Working with providers is particularly important in the case of OraselZinc, given that caregivers need to know that they should give zinc for the full 10 days and along with ORS for the first two days. The POUZN project realized from the beginning that to succeed it would need to train and provide materials for both public and private providers. In March 2008, POUZN developed a single integrated training manual that addressed both diarrhea prevention through improved sanitation, hygiene, and household water treatment and standard case management for pediatric diarrheas, trained over 400

public sector health clinic workers, and followed up with refresher training in 2009. Detailing (promotional) teams visited private clinicians and pharmacies in all target departments and disseminated provider brochures and reference materials. Newly hired medical delegates are currently visiting both public and private sector outlets to market the product and encourage sales. Training of pharmacist assistants throughout the country took place in May 2010.

Promotional efforts target caregivers of children under 5 years of age.

POUZN PROGRAM EVALUATION RESEARCH RESULTS

In May 2009, the POUZN project conducted a mystery client survey among five public sector and five private sector clinics in both greater Cotonou and in the Zou and Collines departments. In November 2009, the project conducted a survey of 2,912 households (which comprised 3,854 children under five) in the seven targeted departments and Cotonou to assess program progress. Caregivers of children were interviewed using a structured survey. In November 2009, PSI also conducted a retail audit survey to determine coverage and penetration of its products, including OraselZinc, nationwide. In May 2010, the project conducted another mystery client survey among 10 public sector clinics in rural areas and 10 private pharmacies in Cotonou. These research findings are highlighted in this brief. When appropriate, data from the BDHS of 2006 served as a baseline.

USE OF ZINC FOR DIARRHEA TREATMENT

The household survey found that 53 percent of caregivers with children under five with diarrhea in the past two weeks had treated with either ORS or a recommended home fluid (compared with 30 percent in the 2006 BDHS in the same target departments) and 31 percent of caregivers used zinc to treat their child during the episode of diarrhea. It is likely that some proportion of these users "converted" from Orasel. When asked what they had done before zinc was available, 25 percent of zinc users said they had treated with Orasel; 9 percent had used

another ORS solution, 20 percent had used a traditional remedy, 18 percent had done nothing, and 13 percent reported having used an antibiotic or anti-diarrheal.

There was no statistically significant difference in zinc use between rural and urban residents (34 percent among urban residents and 28 percent among rural residents). Most zinc users (88 percent) administered ORS along with the zinc, but only 47 percent administered zinc for the full 10 days recommended by WHO/UNICEF guidelines, as shown in Table 2.

Just 12 percent of the zinc users did not give ORS, primarily because they did not know they should give the two products together. Among the caregivers who did not give the full 10-day treatment and whose child no longer had diarrhea, most (77 percent) said it was because the child got better, 7 percent said they were not told to give the tablets for the 10 days, and 3 percent thought the tablets should be given only with the Orasel. Of caregivers who used zinc, 88 percent thought it was an effective treatment. Almost all caregivers (94 percent) who had used zinc said that they would buy it and use it the next time their child had diarrhea.

TABLE 2. DIARRHEA TREATMENT USING ZINC AMONG CHILDREN UNDER FIVE

	Among children with diarrhea (%)	Among zinc users (%)
Treated with zinc	30.9	--
Treated with zinc plus ORS	27.0	87.5
Given zinc for 10 days or more*	14.1	46.6
Treated with zinc for 10 days or more plus ORS*	12.6	42.1
Total number of children	307	103

*Excludes those who had not taken zinc for the full 10 days because the child still had diarrhea.

PRICING FOR SUSTAINABILITY AND AFFORDABILITY

The POUZN household survey also looked into price as a factor of purchase. Of respondents[5] who had purchased the OraselZinc kit, 79 percent felt that the cost was either not expensive or affordable, while 14 percent said that the price was either expensive or too expensive. One-third stated that they would be willing to pay 50 percent more. Table 3 summarizes the wealth distribution of caregivers who used zinc to treat diarrhea and shows that the majority of purchasers came from the poorest segments of the population. This distribution was similar to that among caregivers who did not use zinc to treat diarrhea, although the proportion of caregivers in the middle and richer quintiles was slightly higher among zinc users than among non-users.[6] This finding suggests that price is not a major barrier to purchase or use. The data did not permit determination of whether cost was a barrier for non-zinc users.

TABLE 3. WEALTH DISTRIBUTION OF CAREGIVERS WHO GAVE ZINC TO CHILDREN WITH DIARRHEA IN THE PAST TWO WEEKS, COMPARED TO THOSE WHO DID NOT GIVE ZINC

Caregiver wealth quintile	Percentage of caregivers who gave zinc (n=103)	Percentage of caregivers who did not give zinc (n=204)
Poorest	38.8	44.8
Poorer	21.1	22.2
Middle	14.8	10.9
Richer	18.6	13.1
Richest	6.7	9.0

[5] Only about half (n=32) of 77 OraselZinc purchasers answered this question.

[6] Quintile distribution of non-users closely parallels the distribution of all children with diarrhea in the two weeks preceding the survey.

INCREASING ACCESS TO ORASELZINC THROUGH BOTH PRIVATE AND PUBLIC SECTORS

Our research indicated that 28 percent of caregivers sought treatment or advice from a source outside the home. Among urban respondents who sought advice or treatment outside of the home, 56 percent sought advice from a health clinic, 34 percent from a friend, neighbor, or relative, and 6 percent from a pharmacy. Among rural respondents, 58 percent sought advice or treatment from a neighbor, friend, or relative, while 25 percent went to a health clinic and 16 percent went to a relais communitaire (community health worker). Rural respondents did not seek advice from pharmacies.

The survey also examined sources of supply for caregivers who gave their children zinc during their recent bout of diarrhea, since OraselZinc was available through public, private, and other outlets. Primary sources were public health clinics (64 percent), private pharmacies (24 percent), and relais communitaire (7 percent). Zinc users chose their zinc sources based primarily on quality of care. For example, nearly two-thirds (63 percent) of zinc users who obtained the zinc product at public health clinics said that they did so because of the quality of care at the clinic; over half of those who obtained zinc at pharmacies or via relais also stated quality of care as a primary reason for choosing those sources (55 percent and 52 percent, respectively). Urban users tended to purchase zinc from the public sector health clinic (52 percent) or a pharmacy (44 percent) while rural zinc users tended to purchase the kit from the public sector clinic (78 percent) or a relais (15 percent).

TABLE 4. SOURCE OF ZINC BY WEALTH DISTRIBUTION OF CAREGIVERS WHO GAVE ZINC TO THEIR CHILDREN WITH DIARRHEA IN THE PAST 2 WEEKS

Caregiver wealth quintile	Percentage of caregivers who purchased from public sector source (n=72)	Percentage of caregivers who purchased from private sector source (n=30)
Poorest	49	6
Poorer	19	12
Middle	15	23
Richer	17	33
Richest	0	26

As shown in Table 4, poorer segments of the population tended to use public sector sources, while private sources were most commonly reported among wealthier quintiles – although the price of zinc is the same for all, regardless of source.

IMPROVING CAREGIVER KNOWLEDGE AND TREATMENT OF CHILDHOOD DIARRHEA

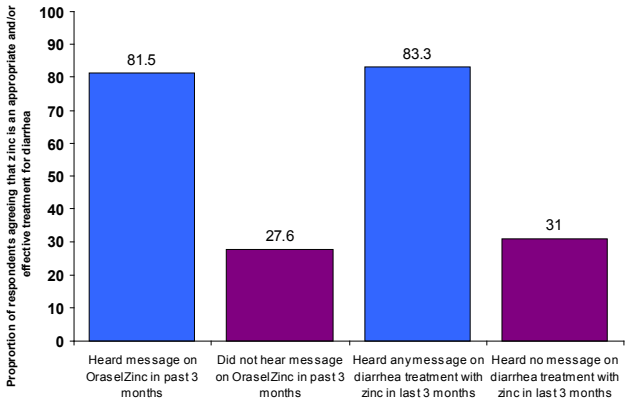
IMPACT OF MASS MEDIA

According to the 2009 household survey, 21 percent of all caregivers of children under five years had heard about OraselZinc in the three months preceding the survey – primarily from radio spots (55 percent), television (23 percent), or friends and relatives (22 percent). While POUZN did not yet have television advertising, the project sponsored a number of talk shows and special features on diarrhea prevention and treatment, which also served as a source of information. Only 10 percent mentioned seeing a message on a poster, sign, or billboard. Of caregivers who had heard a message about OraselZinc,

95 percent knew that the product should be used to treat a child with diarrhea, and 89 percent knew at least one source for obtaining OraselZinc; 52 percent could specifically recall the message that children with diarrhea should be treated with zinc for 10–14 days along with ORS; 45 percent recalled that zinc helps the child with diarrhea recuperate very quickly and 33 percent recalled the message that zinc makes a child stronger.

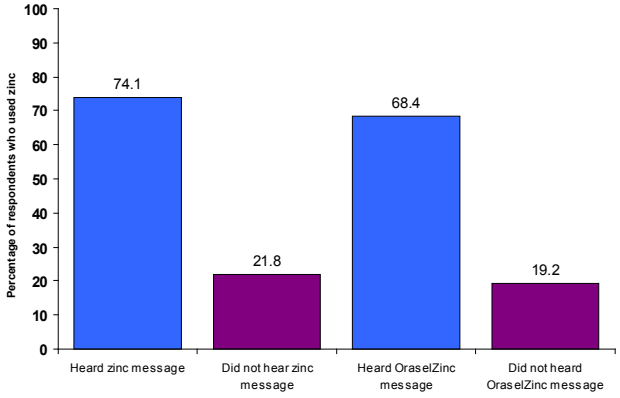
Respondents whose children had diarrhea in the past two weeks who had seen a message about either zinc for diarrhea treatment or OraselZinc in the past three months were more than twice as likely to know that zinc is an appropriate and/or effective treatment for diarrhea than respondents whose children had diarrhea in the past two weeks who had not seen the same messages, as shown in Figure 1.

FIGURE 1. ZINC-RELATED KNOWLEDGE BY RELEVANT MESSAGE RECALL



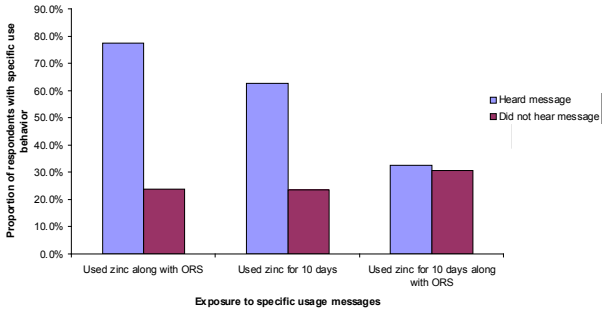
The survey looked at both access and price as factors affecting demand and neither proved to be significant determinants of use. The only statistically significant determinant of use was exposure to mass media. Caregivers who reported that they heard a zinc message in the past three months were significantly more likely to use zinc than those who did not recall having heard a zinc message ($p<0.0001$) (Figure 2). Similarly, caregivers who had heard an OraselZinc message in the past three months were significantly more likely to report zinc use than those who did not hear an OraselZinc message ($p<0.0001$).

FIGURE 2. ZINC USE FOR DIARRHEA IN THE PAST 2 WEEKS, BY RECALL OF ZINC AND ORASELZINC MESSAGES IN PAST THREE MONTHS



Respondents who had heard and could recall a zinc-related message were more likely to correctly use zinc, either by administering zinc along with ORS and/or administering zinc for the full 10 days, as shown in Figure 3. Among those caregivers who used zinc in the past two weeks, the proportion who used it with ORS was higher among those who recalled hearing a message that zinc should be used with ORS than among those who did not recall hearing that message. Similarly, those who recalled hearing the message that zinc

FIGURE 3. ZINC USE BEHAVIOR BY RECALL OF "CORRECT USE" MESSAGES



Note, p-values could not be calculated due to small numbers of respondents in strata. "Correct use" messages include (1) zinc should be used with ORS; (2) zinc should be used for 10 days; (3) zinc should be used for 10 days with ORS. The figure shows the proportion of respondents recalling/not recalling each of these specific messages who practiced each message's promoted zinc use behavior.

should be used for 10 days were more likely to use zinc for 10 days than those who did not recall hearing that message. However, there was no difference in the proportion that used zinc for 10 days with ORS when comparing the group that had heard that message to the group that had not heard that message; the lack of a difference may be due to a small number (n=81) of respondents who used zinc for 10 days with ORS.

IMPACT OF INTERPERSONAL COMMUNICATION EFFORTS ON USE OF ZINC

The POUZN program invested heavily in IPC through NGOs. Given the importance of the community as a source of both information and treatment during bouts of diarrhea, POUZN's partnership with NGOs to disseminate information, counsel mothers, and sell OraselZinc has proven to be very important. NGO field agents, relais, and leaders of women's microcredit groups, now working with the project, have been trained on appropriate use of ORS and zinc, and many have been approached to become sales agents. Among the 12 percent of caregivers in the household survey who stated that they had spoken to someone about zinc as a diarrhea treatment, neighbors, relatives, and friends were cited 41 percent of the time, following health personnel (49 percent) as major sources of information on zinc and advice on diarrhea treatment. Among the 11 percent of rural caregivers who had spoken to someone about zinc, most (69 percent) had spoken to health personnel, followed by neighbors, friends, or relatives (19 percent) or a relais (16 percent). Among the 13 percent of urban caregivers who had spoken to someone about zinc, most had spoken to neighbors, friends, and relatives (48 percent), health personnel (43 percent), or pharmacists (16 percent). Among zinc users who had spoken to someone about zinc, those in urban areas were significantly more likely to have spoken to a pharmacist (21 percent) than rural zinc users (4 percent), and rural zinc users were significantly more likely to have spoken to a relais (33 percent) than urban zinc users (5 percent).

IMPROVING PROVIDER KNOWLEDGE AND PRACTICE

The initial mystery client survey conducted in May 2009 in five public sector and five private sector clinics indicated that 96 percent of the health personnel in the clinics recommended zinc although only 22 percent provided a full set of instructions on correct use. More concerning, 86 percent of personnel surveyed also recommended an antibiotic or anti-diarrheal. In the second mystery client survey in May 2010 (10 rural public health clinics and 10 urban pharmacies where

providers had been trained by POUZN), nearly all (96 percent) of the public health clinic providers recommended zinc and 28 percent gave the full set of instructions for correct use. At pharmacies, 70 percent recommended zinc, but often only after the client had requested a less expensive treatment than the one initially offered; only 8 percent gave a full set of instructions on use. Very few providers recommended antibiotics alone (2 percent in public clinics and 6 percent in pharmacies) or anti-diarrheals alone (2 percent in public clinics but 20 percent in pharmacies); however, 84 percent of public clinics and 52 percent of pharmacies recommended OraselZinc plus either an antibiotic or anti-diarrheal. Antibiotic therapy is only recommended for cases of diarrhea with blood in the stools. The household survey found that just 28 percent of the children given an antibiotic for diarrhea had blood in the stools, suggesting that a large proportion of children given antibiotics in fact should not have been taking them for diarrhea.

Approximately one in five of the outlets surveyed during the retail audit sold zinc separately and a similar proportion had sold ORS by taking apart the kit. This points to the need to examine other options for providing ORS for those consumers who either find the cost of the kit prohibitive or desire access to additional supplies of ORS.

The household survey also looked at source of supply of antibiotics and anti-diarrheals, as shown in Table 5. Nearly half of all antibiotics and anti-diarrheals for diarrhea treatment were obtained from public sector health clinics, followed by pharmacies (23 percent of antibiotics and 32 percent of anti-diarrheals), indicating the need for more targeted interventions with providers in both public and private sectors.

TABLE 5. SOURCE OF SUPPLY OF ANTIBIOTICS AND ANTI-DIARRHEALS REPORTED BY CAREGIVERS WHO USED THESE PRODUCTS FOR DIARRHEA TREATMENTS IN THE PAST 2 WEEKS

Source of products	Antibiotics	Anti-diarrheals
Health clinic	49.7	48.4
Pharmacy	23.3	32.1
Neighbor/friend/relative	12.0	11.4
Other	15.0	8.2
Number of children treated	38	56

CONCLUSIONS

The marketing of a pre-packaged diarrhea treatment kit through both public and private sector channels in conjunction with mass media and interpersonal communication shows significant potential for improving pediatric diarrhea treatment practices. Thirty-one percent of caregivers used zinc for the treatment of childhood diarrheas and almost all of the zinc users administered it along with ORS. This is an excellent use rate for a two-year-old program although some portion of this use can be attributed to Orasel users converting to become OraselZinc users.

The public sector in Benin, as in many other parts of Africa, plays a major role in the delivery of health services. Although POUZN's program is primarily private sector focused, in Benin the public sector is a critical program partner.

The Government of Benin has not yet developed a comprehensive strategy for importation of zinc or developed a formal training program for its cadre of health providers, relying instead on PSI to supply

both Orasel (previously) and OraselZinc (currently) and conduct the training. OraselZinc is the only zinc treatment product available in either public or private outlets. The Ministry of Health purchases OraselZinc at the wholesale price and sells it through its clinics at the full-cost commercial price without providing a social safety net through a lower-priced option – either selling at a wholesale or reduced price or importing the products themselves and providing them at cost to their clientele (thus saving the cost of packaging and omitting the retail margins), although many health centers do have ORS supplies that they can provide free of charge to indigent clients. The household survey findings confirmed the important role of the public sector in delivery of zinc, with the majority of zinc users obtaining the product from health clinics in both rural and urban areas. Moreover, the public health center is the administrative and care referral point for the cadre of relais who are currently both promoting use of and selling OraselZinc (and were an important source of zinc for rural users).

LESSONS LEARNED

Zinc treatment programs in resource-constrained countries where health care is sought primarily from public sector clinics are most effective when public and private sector programs are coordinated and the relationship between the public and private sectors is collaborative. The public sector has worked very closely with the POUZN program, facilitating registration, participating in joint training of clinic providers, and purchasing supplies from the project. Engaging the public sector in Benin has been essential to high use rates. Given the tendency of caregivers in Benin to seek both advice and treatment from public sector sources, this partnership has proven critical to providing consumers with the product.

Zinc promotion through mass media is essential to creating awareness of and demand for previously unknown products, especially in urban areas. Radio advertising, through both local and national stations, has created awareness that OraselZinc is an appropriate diarrhea treatment. Survey results confirmed that those who recalled either a generic or brand-specific message were three times as likely to know that OraselZinc is an appropriate and/or effective treatment for diarrhea. Caregivers who had heard and could recall a specific message related to correct use of zinc were more than two times as likely to have used OraselZinc correctly as those who had not heard the message.

Changing provider behaviors remains a major challenge. One of the most difficult behaviors to change is that of both public and private sector providers' tendency to continue to recommend antibiotics and anti-diarrheals in the face of new treatment guidance and specific training on the subject of diarrhea management with zinc. Additional attention needs to be paid to providers through refresher training and to pharmacy personnel through either detailing or the provision of other incentives (such as increasing the retail margin on zinc product sales to make it more profitable a product when compared to antibiotics or anti-diarrheals) to encourage them to prescribe OraselZinc.

Caregiver compliance with the 10 day zinc regimen continues to be a major behavioral challenge. Caregivers appear to be administering the zinc correctly with ORS, but are not continuing to administer zinc for the full 10 days. Changing this behavior will take more focused effort – through mass media messaging, interpersonal messaging, and working with health care providers at both community and clinic levels to improve counseling skills and to emphasize the protective characteristics of zinc that would provide an incentive to continue use throughout the recommended 10 days.

Building on brand name recognition can be a successful marketing approach. OraselZinc benefited from previous marketing and promotion of Orasel (ORS alone) as the most appropriate diarrhea treatment. Caregivers tended to go to both public and private sector outlets in search of Orasel, which is no longer available, and were sold OraselZinc, thus maintaining a healthy demand for the product and influencing use rates.

Sales person promotes brand awareness at product launch.

The influence of community resources (family, friends, and relatives) cannot be underestimated, particularly in rural areas. These individuals are frequently cited reference points for diarrhea advice and treatment. Information about zinc was frequently obtained from family or friends, indicating the diffusion effects of the many sensitization sessions of partner NGOs and the need for effective community-based IPC and correct information, particularly in rural areas where television and/or radio ownership is low or non-existent. Moreover, rural caregivers tend to seek treatment from primarily public sector or community resources, rather than pharmacies.

The private sector can play a key motivating collaborative role. In a weak but committed public sector health system, the private sector program can motivate the ministry of health to register zinc products for use and sale and ensuring zinc is included on the essential medicines list and can supplement ministry of health resources by collaborating in training staff and even importing products for use by the public sector.

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ABOUT POUZN

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