LEVERAGING INDUSTRY TO ENHANCE DIARRHEA TREATMENT:

A Case Study on Public-Private Partnerships to Introduce Zinc with ORT in Indonesia

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ACRONYMS

ASCODD	Asian Conference on Diarrhea Diseases and Nutrition
B-POM	Badan POM (the Indonesian National Agency of Drug and Food Control)
GMP	good manufacturing practice
GP	general practitioner
IBI	Indonesia Midwives Association
IDAI	Indonesia Pediatric Association
IDI	Indonesia General Practitioners Association
IDHS	Demographic and Health Survey
IMCI	Integrated Management of Childhood Illness
IMDI	Indonesia Medical Data Index
MOH	Ministry of Health
NEDL	National Essential Drug List
NGO	non-governmental organization
ORS	oral rehydration salts
ORT	oral rehydration therapy
PMA	Pharmaceutical Manufacturing Association
POUZN	Point-of-Use Water Disinfection and Zinc Treatment Project
PSA	Public Service Announcement
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Zinc is widely recognized as a highly effective and inexpensive way to treat childhood diarrhea. However, the challenge of introducing a new product and encouraging people to use it —particularly those at "the bottom of the pyramid"— is substantial. In 2005, the U.S. Agency for International Development (USAID) created the Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project and contracted with AED to introduce zinc in combination with Oral Rehydration Therapy (ORT) in India, Tanzania, and Indonesia. Efforts in Indonesia began in 2007.

With a government committed to improved diarrhea management, Indonesia has seen strong reductions in morbidity and mortality related to diarrhea over the last three decades. However, prevalence remains high. Data from 2007 show that 14 percent of children under age five were reported to have had diarrhea during the two weeks (BPS, 2007).

In 2004, the World Health Organization and UNICEF recommended zinc and low-osmolarity oral rehydration salts (ORS) for inclusion in national diarrhea management guidelines (WHO/UNICEF, 2004), based on research funded in part by the U.S. Agency for International Development (USAID). Clinical research suggests that if children take 20 mg of zinc (10 mg for children under six months of age) for 10 to 14 days, the outcome is a 25 percent reduction in the duration of acute diarrhea and a 40 percent reduction in treatment failure and death caused by persistent diarrhea.

The Point-Of-Use Water Disinfection and Zinc Treatment (POUZN) project, a USAID Private Sector Program (PSP) initiative managed by AED, works to introduce zinc, in conjunction with ORT, for childhood diarrhea treatment. POUZN partnered with the government of Indonesia in 2007 to support coordination of a public-private partnerships approach for national introduction of zinc with ORT. Working in Indonesia, POUZN sought ways to:

- Create an enabling environment through support for clear national guidelines, and continuous public sector investment.
- Create a vibrant, competitive market for zinc in which multiple Indonesian commercial companies would produce, distribute, and promote high-quality and affordable zinc.
- Influence the prescribing behaviors of health providers and generate demand among caregivers.
- Encourage appropriate use of zinc in combination with ORT as a diarrhea treatment measure by caregivers nationwide.

POUZN worked to shape intervention efforts around a pharmaceutical marketing model that creates demand through a "cascade of influence" in the health sector (see Figure 2 on page 18). With this model, new ideas and

treatments begin with key medical opinion leaders who influence physicians, whose adoption of a new practice, in turn, influences other health practitioners and drug sellers, eventually reaching and encompassing informal providers and caregivers.

POUZN began with efforts to support an enabling environment for zinc prescription and use. Program staff worked with government officials to incorporate zinc as an effective complementary treatment with ORT into national treatment guidelines. Staff also supported efforts to reduce the time for new pharmaceutical product registration from eighteen to nine months; develop a common messaging platform for use by public, private, and development partners; and encourage procurement of zinc as a program drug for distribution in districts across the country. Efforts simultaneously pushed for corporate entry into the marketplace.

POUZN followed these activities with "push" and "pull" strategies designed to encourage prescription of zinc by providers, together with requests for zinc by caregivers. "Push" efforts included work with national medical associations and manufacturing partners to promote zinc to health centers and providers nationwide. These activities were complemented by intensive outreach to GPs, pharmacies, and midwives to accelerate prescription rates at lower echelons of the cascade. They were eventually complemented with a national "pull" strategy, eliciting caregiver demand through a nationwide radio and television campaign for mothers.

These efforts saw substantial results. After three years of implementation, 10 companies offered thirteen different zinc brands in different pediatric forms, ranging in price from $0.65 to $3.50 per ten-day course. No zinc products were sold in Indonesia at the project's outset. The percentage of randomly selected caregivers who said they gave zinc to their child who had diarrhea in the past two weeks increased from 5 percent nationally at baseline to 16 percent at end-line, though the change was not statistically significant (AED, 2010).

In assessing the POUZN Indonesia effort, a number of lessons have emerged. Coordinating outreach between the public and private sectors appears to have accelerated success. In this, a motivated public sector was valuable as it enabled effective outreach and swift environmental change. The adoption of common diarrhea treatment messages across sectors helped communicating clearly and effectively to all audiences. These types of amenable conditions helped to demonstrate that a sustainable marketplace can be created quickly, which can in turn spur innovation and help to increase demand and availability for a new product. It is important, however, when working to stimulate marketplace activities, to balance supply sourcing efforts with demand generation work. It is also important to understand foundational determinants for corporate decision making and to frame arguments for intervention in ways that are relevant to potential private sector partners. Key opinion leaders can be crucial champions, and help influence the other providers. Interpersonal communication in combination with mass media may enhance possibilities for uptake among providers and caregivers. Communication may also be more effective when framing intervention through the lens of "diarrhea treatment" versus "zinc treatment", as the former may help to build on legacy efforts, leveraging existing recognition of ORS and reinforcing the need for zinc with ORT.

The case study that follows recounts the story of the POUZN Indonesia public-private effort. It provides the context for and goals of the project, outlining activities across programmatic phases.

It looks to the future for next steps and summarizes the principal lessons learned during the project. A table of overall programmatic success follows immediately below.

HIGHLIGHTS OF THE INDONESIA ZINC PROGRAM

- POUZN helped to establish an enabling policy environment within one year of implementation. Zinc treatment was incorporated into national guidelines and declared a program drug. Badan POM, the Indonesian National Agency of Drug and Food Control (B-POM), agreed to fast-track the registration of zinc by local manufacturers, reducing the timeline from eighteen months to nine. A common message strategy was developed and agreed to across both the public and private sectors.

- Within 11 months of implementation, two companies offered three products. Within one year, private sales reached 290,730 courses; sales to the public sector reached 474,500; and the Indonesian government had tendered 969,100 courses for distribution nationally. Sales in the private market are estimated to top 1 million treatment courses by the end of the 2010 fiscal year. Public sector tenders reached nearly 2.6 million courses in year three.

- After three years of implementation, 10 companies offered thirteen different zinc brands under different pediatric forms and ranging in price from $0.65 to $3.50 per ten-day course. No zinc products were sold in Indonesia at the project's outset.

- As of the end of project activities, Zinc treatment was available in more than three quarters of pharmacies nationwide. Nearly 100 wholesalers carried zinc products. Zinc was also available in hospitals, community health centers, clinics, drugstores and through midwives, pediatricians, and general practitioners.

- Midwives in Bandung targeted by the intervention had 58% prescription rate of zinc treatment compared to 33% among midwives exposed to the national mass media campaign only. Caregiver usage rose 27% in the same Bandung area compared to 21% after the six week national mass media campaign at the end of the project..

NEW DISCOVERIES FOR IMPROVED OUTCOMES

In 2004, the World Health Organization and UNICEF recommended zinc and low-osmolarity oral rehydration salts (ORS) for inclusion in national diarrhea management guidelines (WHO/UNICEF, 2004), based on research funded in part by the U.S. Agency for International Development (USAID).

Zinc is an important component of the immune system. A zinc deficiency can increase the incidence and severity of many diseases, including diarrhea; furthermore, diarrhea depletes zinc stores. Research shows that if children take 20 mg of zinc (10 mg for children under six months of age) for 10 to 14 days, the outcome is a 25 percent reduction in the duration of acute diarrhea and a 40 percent reduction in treatment failure and death caused by persistent diarrhea (WHO/UNICEF, 2009). Zinc demonstrates an additional benefit in that a complete zinc treatment course reduces the reoccurrence of diarrhea for about three months. To prevent dehydration, however, which can be deadly, children also need Oral Rehydration Therapy (ORT), including solutions made from ORS, recommended home fluids, or increased fluids (BPS, 2007).

With clinical proof and WHO's official recommendation, zinc treatment has moved from promising concept to widespread introduction. Both ORS and zinc treatment are relatively easy to produce and distribute, both are safe, and neither cause serious side effects. Nonetheless, as with any new practice or product adoption, the acceptance of zinc treatment requires changes in usual behaviors—by health care providers and caregivers—as well as large-scale manufacture and distribution of quality products to accessible outlets.

USAID created the POUZN Project in 2005 to increase the availability and sustained use of these interventions. This publication focuses on POUZN's experiences in Indonesia introducing zinc treatment along with ORT as a standard of care to treat children with diarrhea from 2007 to 2010.

OVERVIEW OF POUZN/AED

Duration of project: 2005–2010

Locations: India, Indonesia, and Tanzania

Overall Goal:
Reduce one of the leading causes of illness and death among children worldwide—diarrhea—through two proven methods:

- Preventing diarrhea by disinfecting drinking water at its point-of-use
- Treating diarrhea with zinc treatment and ORT

Goals of Zinc Program in Indonesia:

- Introduce zinc with ORT as standard treatment for childhood diarrhea on a national scale, with emphasis on coverage by the private sector.
- Ensure supply of the product, create demand and changes in prescription behaviors by providers, and support an enabling environment.

For more information, visit:
http://pshi.aed.org/projects_pouzn.htm

CONTEXT

PREVALENCE AND CLINICAL SUPPORT

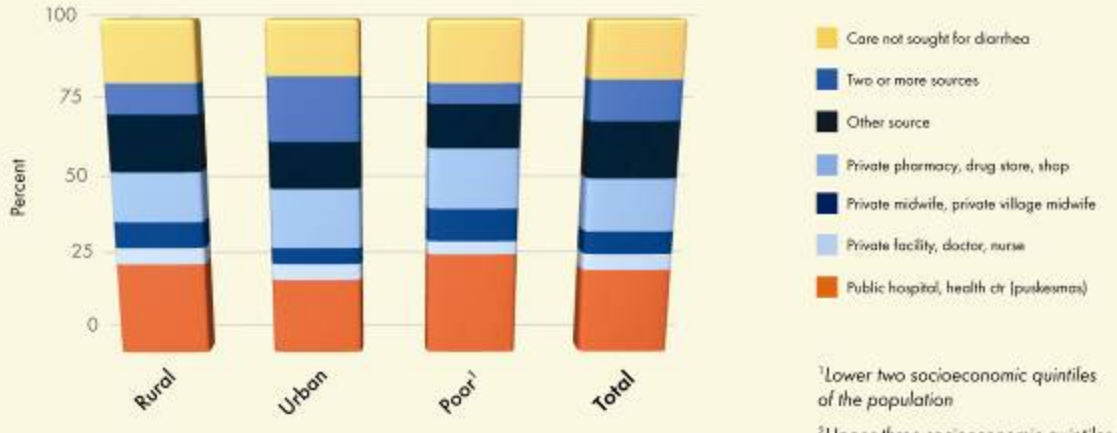
With a government committed to improved diarrhea management, Indonesia has seen strong reductions in morbidity and mortality related to diarrhea over the last three decades. The public sector has intensively promoted ORT and continued feeding, including breastfeeding, since the late '70s. Mortality from diarrhea has dropped from 400,000 annually in 1974 to approximately 20,000 in 2007 (WHO/UNICEF, 2009).

While success is evident, prevalence remains high. The Indonesia Demographic and Health Survey 2007 found that 14 percent of children under age five were reported to have had diarrhea during the two weeks prior to the survey (BPS, 2007). Treatment was sought for 74 percent of these cases. Solution prepared from packets of ORS was provided to 35 percent. ORT was provided to 54 percent (BPS, 2007).

Healthcare practitioners are vital sources of health care delivery in Indonesia

Healthcare practitioners, including pediatricians, general practitioners, and midwives, are important sources of health care delivery for diarrhea treatment, and represent a key audience for intervention. Figure 1 shows the distribution of care seeking behaviors, by socio-demographic status, for parents whose children under the age of five had diarrhea in the past two weeks, as reported by the Indonesia Demographic and Health Survey 2007 (BPS, 2007). Of note, the private sector provided a

FIGURE 1: CARESEEKING FOR UNDER-FIVE CHILDREN WITH DIARRHEA IN PAST TWO WEEKS



Source: POUZN Project (AED) analysis of DHS (2007) data files, June 2010.

[1]Lower two socioeconomic quintiles of the population

[2]Upper three socioeconomic quintiles of the population

substantial amount of care for children with diarrhea, working with 47 percent of cases, as compared to 17 percent of cases seen by the public sector (BPS, 2007).

AN ENVIRONMENTAL ASSESSMENT

In late 2006, USAID assembled a team of national and international experts to explore opportunities and barriers associated with national uptake of zinc across Indonesia's nearly 17,000-island archipelago. Having worked in India and Tanzania for nearly two years, POUZN supported the assessment team in a strategic exploration of opportunities and barriers associated with the introduction of zinc in both the public and private sectors.

With respect to the public sector, efforts indicated that the Indonesian government was both enthusiastic and well prepared to introduce zinc as a primary strategy for diarrhea treatment. Public institutions were ready to change national diarrhea guidelines and to partner with the private sector in providing zinc treatment.

A robust private sector appeared interested in and ready to distribute zinc treatment across Indonesia. Demand for diarrhea treatment had increased substantially year-over-year from 2006 to 2007, with sales of probiotic treatments growing 63 percent and ORS growing 22 percent in the private market. The private sector had proven itself able to meet that demand, driving products to scale rapidly and at low cost using well-developed commercial capacities, including tested product development, marketing, and distribution assets. Notably, products it developed could benefit other countries in the region, including Vietnam, Cambodia, Laos, and Myanmar.

The USAID assessment team concluded in March 2007 that Indonesia was well suited to the introduction of zinc treatment for diarrhea as an adjuvant to ORT, and that the private sector could play a leading role in the introduction of zinc to the market. POUZN subsequently made strategic recommendations to the Indonesian government for the introduction of ORT and zinc, including a strong role for the private sector. With zinc unavailable in Indonesia at the time, the project committed to supporting both sectors simultaneously and with equal emphases. This became the heart of its approach going forward.

POUZN GOAL AND INITIAL STRATEGY

POUZN sought to build on Indonesia's previous success in reducing diarrhea mortality—success that had established a national platform of providers and associations well aware of diarrhea treatment through ORT and continued feeding. The project's goal in Indonesia was to introduce zinc treatment, in combination with ORT, as a standard childhood diarrhea management by increasing access to the product, improving knowledge and correct use of the treatment, and supporting an enabling environment for these changes. The project sought to achieve these ends through approaches that were both scalable and sustainable over the long term. While the main objective was to reach caregivers and improve the health of their children, the project also targeted the many individuals and groups who had an impact on caregivers, including doctors and other health professionals (both formal and informal), and a wide range of drug sellers.

POUZN targeted caregivers for improved diarrhea treatment through ORT and zinc

POUZN embraced a mandate in Indonesia to work on a national scale after having implemented its approach in India (the world's second largest country) and Tanzania (the first country to introduce branded zinc treatment of diarrhea in sub-Saharan Africa). Primed with lessons learned from two years of prior implementation in very different contexts, the three-year project (2007–2010) worked with budgets of $150,000 and $330,000 in its first two years. From the outset, it was necessary to focus resources strategically.

Efforts mobilized multiple sectors, including a motivated public sector, a robust private sector, and an active development sector. From the outset it was important to harmonize these efforts, helping them to complement one another's activities. Working in Indonesia, POUZN sought ways to:

- Create an enabling environment through support for clear national guidelines, and continuous public sector investment.
- Create a vibrant, competitive market for zinc in which multiple Indonesian commercial companies—manufacturers, distributors, and marketers—would produce, distribute, and promote high-quality and affordable zinc.
- Influence the prescribing behaviors of health providers and generate demand among caregivers.

- Encourage appropriate use of zinc in combination with ORT as a diarrhea treatment and prevention measure by caregivers nationwide.

POUZN's initial strategy was to build on the pharmaceutical marketing model that creates demand through an existing "cascade of influence" in the health sector (see Figure 2 on page 18). With this model, new ideas and treatments begin with key medical opinion leaders who influence physicians, whose adoption of a new practice, in turn, influences other health practitioners and drug sellers, eventually reaching and encompassing informal providers and caregivers. Another way to envision this process is through a "push-pull" framework, in which pharmaceutical companies "push" products to consumers by encouraging the medical community to prescribe them, while "pulling" drugs from the medical community by encouraging consumers to ask their physicians

POUZN TIMELINE

Time	Activity
September 2006	• POUZN meets with Indonesian officials
March 2007	• POUZN recommends strategy to Indonesian government
May 2007	• POUZN initiates Indonesia activities
June 2007	• Zinc policy adoption begins
July 2007	• Fast track zinc registration established
December 2007	• First zinc generic product launched
April 2008	• *Lintas Diare* messages developed and adopted
June 2008	• Two companies selling zinc • Government tenders 1,000,000 courses for distribution
March 2009	• Bandung pilot initiated
July 2009	• Midwives strategy initiated
May 2009	• Five new brands (four new companies) on the market • Zinc in nearly half of all pharmacies nationally • Combined public and private zinc sales reach nearly 2 million courses
May 2010	• Launch of mass media campaign
August 2010	• Two new zinc products are launched bringing the total to 10 manufacturers and 13 brands • Endline survey results
September 2010	• Government tenders 2.6 million zinc courses • Estimated year-end sales of 1 million zinc courses to private pharmacies

directly. POUZN began its efforts with a "push" strategy starting at the top of the "cascade of influence" in years one and two. It added a "pull strategy" in year three with national direct-to-caregiver marketing.

The balance between creating supply and promoting demand for a new product is a delicate one. One of the cardinal principles of a health communication program is never to promote demand for a product that is unavailable or inaccessible to the target group. POUZN chose to focus resources initially on public policy and private investment, while coordinating “cascade” marketing efforts to key medical opinion leaders, pediatricians, and general practitioners. These efforts were designed to ensure the timely introduction of zinc, together with an improved diarrhea treatment regimen that matched demand with supply produced by the private sector.

PHASE I: HARMONIZING EFFORT

As noted above, POUZN worked early on to harmonize public and private sector efforts. While the private sector played a preeminent role in health care delivery, most health care providers in Indonesia worked from within the government system. Both sectors were vibrant and active. POUZN needed to approach each simultaneously.

THE PUBLIC SECTOR APPROACH: CREATING AN ENABLING ENVIRONMENT

On the public sector side of the equation, efforts needed to build on Indonesia's current diarrhea treatment infrastructure that had been so successful to date. This meant working to ensure that guidelines and regulations were updated, a clear messaging strategy was developed, and the groundwork was laid for purchasing supply through public resources.

Policy and National Guidelines

The Indonesian government was enthusiastic about the introduction of zinc as part of an improved treatment for diarrhea. However, groundwork needed to be laid to translate that enthusiasm into a reality conducive to public distribution and private investment. POUZN began working immediately with USAID and collaborating development partners to incorporate zinc as an effective complementary treatment with ORT into the Guidelines on the Integrated Management of Childhood Illness (IMCI) and National Diarrhea Program guidelines. Both sets of guidelines were updated within months of startup, grounding future efforts in the most up-to-date guidance for diarrhea treatment and prevention.

Regulation

Regulation served as another critical lever in shaping the environment. The government managed a registration process for new pharmaceutical products that could take up to eighteen months to complete. POUZN advocated directly with central authorities to minimize this timeframe. Because they were enthusiastic about zinc introduction as a public health product and recognized the private sector as a critical partner for intervention, B-POM, the Indonesian National Agency of Drug and Food Control, agreed early to fast-track registration of zinc down to a period of nine months. In a corporate world where efficiencies often drive decision-making, this was a key victory in ensuring a speedy time-to-market as an incentive for corporate investment. B-POM also agreed to register zinc treatment as a pharmaceutical drug, not a nutritional supplement, and to allow over-the-counter (OTC) applications from manufacturers. The government augmented these efforts by writing a letter to the Indonesian Pharmaceutical Manufacturing Association (PMA) requesting interested members to manufacture zinc treatment in accordance with WHO/UNICEF recommendations.

Consistent Messages

It was also critical to develop a consistent messaging strategy for diarrhea treatment that could be used across the public and private sectors. POUZN worked with representatives from both arenas, together with NGOs and donors, to develop a consistent communication strategy for improved treatment of diarrhea.

Convening a meeting among key opinion leaders, top pediatricians, and MOH officials, POUZN program staff facilitated dialogue and subsequently developed a coherent and visually relevant message concept. The outcome was *Lintas Diare* a set of simple communication messages targeting specific behaviors for treatment of children under five with diarrhea.

Lintas Diare promoted five specific behaviors, pictured above in Bahasa Indonesia, and described below in English:

- Give Oralit (the WHO formula low-osmolarity ORS).
- Give zinc for 10 consecutive days to reduce duration and severity of diarrhea and reduce reoccurrence of diarrhea during the next three months.
- Continue breastfeeding and feeding during diarrhea.
- Do not give antibiotics unless bloody diarrhea and/or cholera occurs.
- Return immediately (to the doctor or health service) whenever fever, bloody feces, or repeated vomiting occurs or your child's appetite significantly decreases.

The message was adopted universally across public, private, and development sectors and promoted through conferences, trainings, medical detailing, and medical publications. All zinc partners adopted *Lintas Diare* for the promotion of diarrhea treatment.

Supply

POUZN partnered immediately with the Indonesian government to enlist zinc as a "program drug," ensuring that it could be purchased by the Ministry of Health (MOH) for distribution to provinces and districts across the country. Having incorporated zinc as a complementary resource to ORT into national guidelines for diarrhea treatment, the Indonesian government moved to securing supply. With encouragement from POUZN, a zinc request of 969,100 courses was submitted in 2008 to two manufacturing partners for fulfillment. Within a year's time, nearly one million courses of zinc had been purchased for distribution nationwide. An additional 100,000 courses were sold to three Provincial Health Offices for distribution to district health offices and health centers (Puskesmas). It is important to note, however, that while zinc was approved as a "program drug", it was not included in the National

Essential Drug List (NEDL), limiting use of zinc in hospitals and health centers (see "Sustained Public Sector Support" below for more on the NEDL and related challenges).

Demand

Having actively partnered with Ministry of Health (MOH) officials on changes to guidelines, product registration, consistent messaging, and procurement, POUZN turned its attention to generating demand in the public sector. Health centers across the country needed to know that zinc was effective and would soon be available. Toward this end, the project sponsored zinc orientation meetings for hospital heads and District Health Offices across Indonesia. Outreach included distribution of updated IMCI and National Diarrhea Program guidelines, together with FAQ booklets and *Lintas Diare* posters. In total, POUZN efforts reached all 7,000 health centers nationwide with updated information facilitating prescription of zinc with ORT for a substantial proportion of diarrhea cases nationwide.

CRITERIA FOR SELECTING INITIAL PHARMACEUTICAL PARTNERS

POUZN's assessment of pharmaceutical company capabilities focused on a wide range of factors:

- Rank in Indonesian market (sales revenue)
- Zinc production capacity (single or in multiple formulations)
- Willingness to take part in zinc project
- Field force (medical reps) structure and size
- Past experience with ethical marketing
- Past experience with over-the-counter (OTC) marketing
- Past experience with rural/ social marketing
- Past experience covering paramedics (e.g., nurses, midwives)
- Past experience with institutional supplies
- Distribution network and channels
- Research and development capabilities
- Manufacturing facilities (own or outsourced)
- GMP status*
- Production capacity for tablets/dispersible tablets & oral liquids
- Financial strength
- Corporate social responsibility
- Export of sales: % and countries

*Good Manufacturing Practice (GMP) is a status granted by WHO that indicates quality production.

THE PRIVATE SECTOR APPROACH: ENCOURAGING MARKET ENTRY

A core perspective of the POUZN approach is that stronger markets (with more competitors) allow for greater promotion, extended coverage, expanded consumer choice, and ultimately lower prices. Thus, POUZN coordinated outreach to the private sector in parallel with the above mentioned public sector efforts, hoping to quickly encourage investment by the private sector. It was critical to get zinc to market in a manner that coincided with public sector efforts to promote and purchase the treatment.

POUZN worked to identify and elicit a number of private sector partners. Partners were selected with a long-term perspective in mind, hoping that intentions would go beyond short-term gain to a more perpetual institutional viability.

Project staff assessed potential partners via a set of criteria already used in India and Tanzania, looking at production, quality assurance, distribution, promotional reach, and general corporate characteristics (see box to the left). During the initial project assessment, manufacturing partners had expressed concerns that zinc was a public sector product, not necessarily primed for private investment and promotion. These perceptions had to be overcome to encourage market entry.

Based on this assessment, POUZN staff visited directly with seven of the top ten pharmaceutical companies in Indonesia, making a credible case for investing in this new product. In these initial meetings POUZN provided a carefully designed package of materials, including: 1) a convincing summary of the clinical research about zinc as a state-of-the art treatment, along with a complete bibliography; 2) WHO/UNICEF guidelines on zinc and ORS treatment for childhood diarrhea;

and 3) a document on the manufacturing process for zinc tablets and syrup (WHO, 2007). POUZN staff discussed the market and business potential for this new treatment and requested that a company, if interested, undertake its own feasibility study of the market. These early efforts, together with the emerging conducive policy environment, helped to motivate what would eventually grow to seven of the top ten companies in Indonesia developing a zinc treatment not only for the Indonesian market, but also for several other countries in the region.

In keeping with a strategy of building local ownership and sustainability, POUZN's role was a supportive one, providing targeted assistance to manufacturing partners designed to facilitate fast progress and encourage stronger investments. Those that decided to move ahead with introducing zinc treatment developed, registered, manufactured, branded, and packaged zinc using their own resources and marketing it through their own systems.

Within 11 months of intensive project startup, two companies had registered three products (two tablets and one syrup) and generated private sector sales of nearly 85,000 courses. An additional five companies had submitted products for registration by B-POM. The marketplace was up and running.

IMPROVING TREATMENT

As noted earlier, Indonesia had intensively promoted oral rehydration therapy (ORT), together with continued feeding, including breastfeeding, since the late 1970s. However, while health professionals and, to a certain extent, the public, had a reasonably good knowledge of diarrhea management, they were unaware of the effects of zinc treatment in decreasing duration and severity, and in providing a preventive effect against diarrhea. Additionally, anti-diarrheals and antibiotics served as popular medicines given by caregivers to children with diarrhea, an unnecessary practice POUZN hoped to mitigate through improved diarrhea treatment promotion efforts.

The Cascade Marketing Strategy

As noted earlier, POUZN and its partners initiated a cascade marketing strategy (see Figure 2 to the right), a proven technique used by the pharmaceutical industry for new product launches, to promote improved treatment to health care providers across the country. The strategy concentrated first on reaching key opinion leaders at the top of the hierarchy of influence in health matters. Efforts then moved to gaining the support of pediatricians and general practitioners (GPs). In later phases of the project, POUZN would move toward more aggressively targeting pharmacies (apoteks), nurses, midwives, and caregivers at-large through general public outreach efforts.

FIGURE 2: CASCADE OF INFLUENCE

The cascade of influence represents a successful pharmaceutical marketing model applied to the diffusion of zinc in Indonesia.

Key Opinion Leader Outreach

Efforts began in 2008 with the incorporation of a plenary session on zinc treatment at KONIKA, the Indonesia Pediatric Association's (IDAI) national congress hosting 3,000 pediatricians (nearly all pediatricians in Indonesia). POUZN staff advocated for zinc's inclusion on the

agenda, and arranged for Dr. Olivier Fontaine from the World Health Organization (WHO)—an internationally recognized expert in diarrhea, micronutrient, and other nutritional interventions—to present the la-test scientific information, together with impro-ved treatment messages, on diarrhea management.

Professional Mobilization

POUZN efforts continued throughout the year, reaching the Indonesia General Practitioners Association's (IDI) annual conference, the Midwives Association's (IBI) Annual Congress, and the Asian Conference on Diarrhea Diseases and Nutrition (ASCODD). Conference participants received a CD with a collection of tools, including Q&A on zinc and ORS treatment, and a ready-to-deliver PowerPoint presentation, which they were encouraged to show colleagues at their own hospitals or universities and their local chapters of the IDAI throughout the year. These efforts were coordinated in conjunction with private sector partners, who provided support, including registration fees for targeted physicians, keynote speakers, and printing and distribution of improved treatment promotional materials. They were complemented by placement of messages in medical magazines read by practitioners across the country.

Product “Detailing”

POUZN also supported manufacturing partners' own marketing networks. The established practice is for company medical representatives to “detail” products: that is, present the product benefits to doctors, other health providers, and pharmacists, and provide free samples. The contacts are often very short, especially in busy, urban clinical settings, but frequent. Embracing this strategy, POUZN trained partners’ medical representatives in diarrhea and zinc treatment benefits, and provided guidance on ways to promote zinc to doctors. Later program efforts would work to saturate the cascade through the mobilization of multiple manufacturing partners whose divisions spanned a diversified portfolio of health professionals.

ESTABLISHING THE BASELINE

As distribution took hold and the marketplace continued to develop, POUZN invested in an assessment of caregiver behaviors to establish baseline indicators for the project. A household survey was administered to 506 mothers in Bandung and its surrounding area—a densely populated region of the country with a population of well over 8 million people (Nielsen, 2009). The intent was to outline initial zinc-related behaviors and to better understand the knowledge and attitudes underlying those behaviors.

Among the sample of mothers taken, 8 percent had children with diarrhea in the previous two weeks. Just over half of those mothers said they sought advice on treatment. Notably, only 4 percent were advised to give zinc; 3 percent actually treated their children with zinc (Nielsen, 2009).

The strongest sources of information for mothers who sought advice were neighbors (69%), midwives (31%), *puskesmas* (community health centers) (16%), *posyandus* (integrated health services posts) (6%), and general practitioners (6%) (Nielsen, 2009). The bottom of the cascade was clearly a key target for influencing caregivers' treatment decisions.

The survey revealed, as expected, that mothers were generally unaware of zinc. Nearly all (99%) could not think of a location at which they could purchase zinc. Just 2 percent said they could remember messages related to zinc as a treatment for diarrhea in the last three months (Nielsen, 2009).

While use and awareness were in line with expectations, general treatment behaviors revealed opportunities for strong uptake. For example, 86 percent of mothers whose children had diarrhea treated their children with some type of medicine. A large majority (92%) indicated that they would purchase and use zinc together with ORS the next time their child had diarrhea (Nielsen, 2009).

A CRITICAL TURNING POINT

Taken in total, this assessment served as a critical turning point for the project. It confirmed what marketers would term a "latent" demand for zinc—demand for a product yet to be created or sold. Further, it clearly identified critical influencers in the lower echelons of the cascade for future outreach: midwives, village health clinics (puskesmas), and community health centers (posyandus) emerged as strategically important targets for zinc adoption.

These findings had substantial implications for the project. Through initial efforts, private sector partners had invested heavily in marketing to the top of the cascade, especially to key opinion leaders and pediatricians. However, due to institutionalized market segmentation strategies, they had not focused on general practitioners, drug sellers, midwives, or community health practitioners. This left critical segments of the health community untargeted. POUZN needed to adjust course to realize additional public health benefits. Phase II below describes how POUZN staff explicitly targeted strategies designed to encourage additional public and private sector investment in reaching key caregiver influencers in the lower part of the cascade as identified through the program baseline.

Midwives and community health practitioners emerged as critically important strategic influencers.

ASSESSING RESULTS:

The Marketplace Is Established

- POUZN supported a policy shift that substantially enabled zinc production and distribution. Working in tandem with POUZN staff, the MOH integrated zinc treatment into national guidelines and declared zinc treatment a program drug, thereby allowing its procurement and supply to the public health system. The regulatory body, B-POM, agreed to fast-track the registration of zinc by local manufacturers, reducing the timeline from eighteen months to nine.

- POUZN helped to establish a national marketplace for commercial zinc production—investing manufacturing partners' own resources in research and development, production, and marketing. Two companies launched products within the first 11 months of intensive implementation. An additional five companies had submitted products for registration by B-POM.

- POUZN facilitated agreement among public and private sector partners around a coordinated marketing strategy, eliminating the potential for disparate or even contradictory messaging, and amplifying the strength of a national message for improved treatment through zinc and ORT.

- POUZN initiated activities to reach health care providers with improved treatment messages down the cascade of influence. Zinc was supported by key opinion leaders. Notably, outreach efforts included private sector partners coordinating marketing activities through their own detailing infrastructures at their own expense.

- Production and sales emerged. Within the first eleven months, 85,000 courses were sold on the private market. Within one year, private sales reached 290,730 courses; sales to the public sector reached 474,500 courses; and the Indonesian government had tendered 969,100 courses for distribution nationally. One year earlier, no zinc products had been sold in Indonesia.

PHASE II: ACCELERATION THROUGH THE CASCADE

After just one year of intensive intervention, many of the building blocks for introducing zinc at scale were in place: supportive guidelines and regulations; competitive manufacturers; mobilized professional associations; and coordinated messaging. As findings about relatively untargeted key influencers emerged, next steps became clear: POUZN began to focus attention on accelerating promotion through the cascade to GPs, pharmacies, midwives, and community health practitioners, while continuing coordination of complementary outreach across the public and private sectors.

COORDINATING AN EXPANSION PILOT

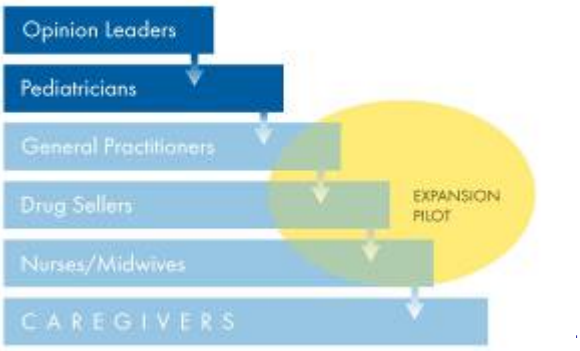
POUZN initiated a six-month expansion pilot designed to test and demonstrate the effects of concentrated promotion to the lower echelons of the cascade. The intent was to show that GPs, pharmacies, and midwives represented viable target audiences for pharmaceutical investment. This would in-turn "pull" manufacturing partners deeper into the cascade, encouraging them to invest their own resources into reaching key-influencers through their own scale-up of pilot strategies.

Pilot implementation was selected for Bandung City and Bandung District, two heavily burdened areas of the country serving nearly 9 million people. The prevalence of childhood diarrhea across both areas was approximately 18 percent, slightly higher than the country average of 14 percent (DHHS 2007). Need was also matched by opportunity, as additional public sector programs would be training nearly 100 general practitioners. The pilot could also take advantage of household survey findings, providing insight into regional care seeking behaviors.

POUZN pilot activities followed a two-pronged approach, working to encourage uptake by outlets and providers, while at the same time stimulating awareness and demand among caregivers. In outreach to outlets and providers, POUZN hired and trained a professional marketing firm to detail pharmacies, drugstores, and midwives. Promotional teams were directed to repeatedly reach all 679 drug sellers and 269 midwives in Bandung throughout the pilot period.

All private sector partners were informed and consulted during the pilot's development. In support of the pilot, POUZN asked each to provide promotional items and to ensure that zinc treatment was available in the expansion

FIGURE 3: CASCADE OF INFLUENCE



Expansion pilot efforts focused on extending outreach through lower levels of the Cascade of Influence.

area. Post pilot assessment was planned to test for behavior change and demand creation, including use of a "mystery client" survey exploring the quality of treatment recommend-dations provided by sales outlets during the intervention.

By all accounts, the project was a success. During the pilot, over 1,100 outlets (817 pharmacies, 287 midwives, 56 drugstores) were visited by detailers, exceeding a target of 960 outlets. This led to substantial success in the adoption of zinc sales by pharmacies and drug stores. By the end of activity, zinc was available at 732 outlets, exceeding the project's goal of 672. Zinc and *Lintas Diare* poster displays had been posted at 497 outlets (345 pharmacies and 152 midwives), exceeding a target of 480. Two pharmaceutical companies committed to new activities targeting pharmacies and drug stores for promotion. One company committed to tar-geting GPs. Among these organizations, one company began targeting midwives. However, their coverage was limited due to the extent of their sales force.

POUZN followed the success of this pilot by continuing high-intensity outreach to midwives, GPs, Community Health Centers, and Diarrhea Program Managers in Bandung City and Bandung District. Working in collaboration with the Bandung IBI chapter, the program began providing an enhanced midwives training throughout both areas. All told, project staff and their partners reached nearly 600 government and private midwives (44 percent of midwives in the area) with information on the use of zinc and ORS for the treatment of diarrhea. Every training was attended by manufacturing partners' medical representatives to ensure that products were available and that midwives were followed up with.

POUZN also partnered with the Bandung area District Health Office to train 168 general prac-titioners, leaders at local Community Health Centers (Puskesmas), and 150 Diarrhea Program managers. Trainings were supported by dissemination of *Lintas Diare* materials, including posters, FAQ diarrhea booklets, and a DVD of presentation materials. POUZN also successfully advocated for a 45,000 dosage procurement of zinc by the District Health Offices for Bandung City and Bandung District, helping to ensure public sector supply in anticipation of increased prescriptions.

A number of community health workers attended POUZN training sessions as part of intensified outreach to lower echelons of the cascade.

SUSTAINED PUBLIC SECTOR SUPPORT

While key policy victories had been established early on, one substantial barrier remained to ensuring continuous supply of zinc in the public health system. As noted earlier, zinc treatment was not included in the NEDL. This substantially impeded prescription in the public system as hospitals and health centers must use NEDL drugs for treatment. Public hospitals can use drugs outside the NEDL, but these expenses must comply with cost limitations, be approved by the hospital's director, and be reported to the NEDL regulatory authority.

Non-approval by the committee was based on safety concerns surrounding a new treatment (zinc had just launched three months prior to the committee's review). The national review committee responsible for developing the list requested a post-marketing surveillance study to provide evidence that the drug is safe for children at the recommended course. Accordingly, POUZN began coordinating efforts with the Ministry of Health's Diarrhea sub-Directorate and external bodies, including WHO and UNICEF, to address the review committee's concerns in preparation of the next NEDL revision in 2011 (the NEDL is revised once every three years).

Additionally, POUZN continued to support market introduction efforts by working with B-POM to fast-track registration for new products. The project coupled outreach with discussions advocating for increases in zinc funding in the federal budget, together with zinc procurement through government dollars, and zinc distribution to provinces, districts, and health centers.

By continuing its government partnership efforts, POUZN helped to connect four private sector partners to a tender of 1,000,000 courses by the MOH for distribution to 33 provinces nationwide.

SUSTAINED PRIVATE SECTOR SUPPORT

As POUZN moved into its second full year of implementation, four additional manufacturers were expected to launch their zinc brands, bringing five new brands to market (see Table 1 below).

Seizing these launches as new opportunities to further national adoption of zinc treatment, POUZN worked individually with each partner on a number of fronts. Project staff supported the development of marketing plans, working to ensure outreach across both the private and public markets with an emphasis on reaching pediatricians, general practitioners, pharmacies, and midwives. Staff also supported the development of promotional materials to ensure consistent communication using the *Lintas Diare* message. POUZN continued to train medical representatives to maintain effective detailing on appropriate zinc treatment. In some cases, POUZN was able to connect private partners to institutional purchasers (central and district governments), enabling large-scale public distribution. In one instance, POUZN assured quality product development, advising a manufacturing partner to reduce their dosage from 14 tablets to 10 tablets per the *Lintas Diare* guidelines.

TABLE 1: PRODUCTS TO MARKET

COMPANY	BRAND NAME	PRODUCT FORM	INTRODUCED
Kimia Farma	zinc generic	Tablets	December 2007
Kimia Farma	DIAZINK	Tablets	January 2008
Indo Farma	ZINKID	Tablets	February 2008
Indo Farma	zinc generic	Tablets	June 2008
Kalbe Farma	Zn-DIAR	Tablets	February 2009
Combiphar	ZINCPRO	Syrup	May 2009
Combiphar	ZINCPRO	Tablets	May 2009
Indo Farma	ZINKID	Syrup	May 2009
Novell	OREZINC	Powder in sachets	May 2009
Kalbe Farma	ZINCARE	Tablets	May 2009
Interbat	INTERZINC	Tablets	July 2010
TEMPO Scan	ZIDIAR	Syrup	July 2010
TEMPO Scan	ZIDIAR	Tablets	July 2010

POUZN complemented these efforts with continued support for conference and medical education. Project staff successfully advocated for the addition of “zinc as a diarrhea treatment” to an IBI national meeting with over 2,000 midwives from across Indonesia in attendance (a strategy neatly complemented by detailing efforts associated with one partner's ob-gyn product-line to midwives). POUZN trained over 3,000 GPs on "zinc as a diarrhea treatment" at the IDI Continuous Professional Development Conference. Both organizations partnered subsequently on the development of accreditation round table discussions addressing diarrhea management with nearly 1,200 general practitioners in over nine major cities. Project staff also coordinated efforts for the 2009 ASCODD conference, supporting symposium registration fees of 25 influential doctors, co-sponsoring a speaker, and coordinating distribution of *Lintas Diare* promotional materials by private sector partners. Two manufacturers, including Indonesia's largest pharmaceutical company (and strongest marketing outreach arm), launched new products at the event.

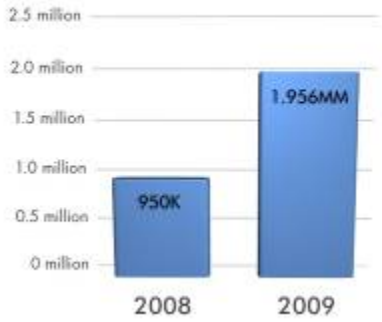
These efforts bore substantial fruit. Total zinc sales by the end of POUZN's 2009 fiscal year were 1.956 million courses, surpassing the program’s internal goal by 30 percent. Commercial partners reached an estimated 2,070 pediatricians and 6,245 general practitioners. Zinc treatment was available in nearly 50 percent of all pharmacies covered by the partners nationally. As predicted by the POUZN approach, a stronger market (with more competitors) had increased promotion, extended coverage, and expanded consumer choice—zinc products had been launched in different product formats (syrup, dry syrup, and tablets), at different price levels (ranging from roughly $0.65 to $3.50), spanning multiple segments and making zinc available to a wide population. Of note, companies producing both ORS and zinc products co-promoted brands, enhancing overall diarrhea treatment while introducing zinc to the market. In total, much of the manufacturing sector's effort was shouldered in a sustainable way through existing pharmaceutical investment, distribution, and marketing infrastructures

ASSESSING RESULTS:

Acceleration through the Cascade

- POUZN successfully advocated for a Ministry of Health tender of 1,000,000 courses for distribution to 33 provinces nationwide.
- Four new producers entered the marketplace, adding five new brands by August 2009, with three additional brands expected for registration in 2010.
- POUZN medical education efforts reached more than 2,000 midwives, 2,070 pediatricians, and 6,245 general practitioners.
- Zinc treatment was in nearly half of all pharmacies nationally.
- Total zinc sales after two years reached 1.956 million courses, surpassing the program's goal by 30 percent.

FIGURE 4: INDONESIA DISTRIBUTION



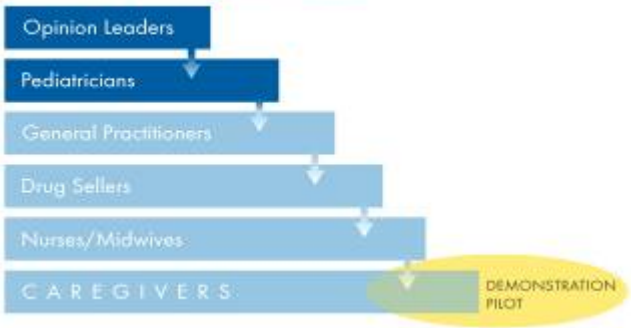
- POUZN pilot efforts succeeded in encouraging more than 75 percent of sales outlets in Bandung, the nation's second largest metropolitan area, to carry zinc, and convinced private partners to invest in targeting GPs and midwives. Much of this original partner outreach persists today.

PHASE III: MOMENTUM THROUGH CAREGIVER

With significant efforts having been made toward drug stores, GPs, and midwives, the lower echelons of the cascade were beginning to see sustained promotion. While gaps remained in critical outreach, they were closing as manufacturers began reaching them with increasing amounts of intensity. The next push to sustain momentum needed to come from the ground up via a “pull” strategy through caregivers.

Pharmaceutical companies typically follow a pattern of outreach that moves from the top of the cascade to the bottom. Early promotional investments in the life cycle of a new drug tend to target a "push" strategy from the medical industry to the consumer. Manufacturers hope to saturate providers with promotional messages that change entrenched prescribing behaviors. Companies may then switch to a higher-cost approach: mass-media convincing consumers to go directly to their providers with specific prescription requests. These investments typically happen later in the marketing life cycle because they involve relatively higher marginal costs (developing and placing advertisements on national scale mass media) and risk falling short if providers are unwilling to prescribe the medicine.

FIGURE 5: CASCADE OF INFLUENCE



The demonstration pilot targeted lower echelons of the "cascade" to demonstrate viability for sustained private sector investment in reaching key influencers.

In the case of POUZN and diarrhea prevention, this marketing lifecycle was accelerated—while promotional outreach may not have saturated providers, it was critical to reach caregiver audiences with an innovation that promised as much as a 40 percent reduction in death caused by persistent diarrhea. Early investments in mass media would hopefully stimulate consumer demand as early as possible. Toward this end, POUZN invested in developing a national radio and television campaign to serve as a primary platform for reaching caregivers, while simultaneously incentivizing additional pharmaceutical investments in key populations and a public sector focus on expanded supply. It is important to note here that while manufacturing partners did expand their detailing and promotional efforts, the zinc business case could not justify shouldering mass media costs. Zinc pricing simply did not merit high-dollar investments in consistent television and radio placements when compared to other alternatives for investing scarce corporate funds.

Program staff worked together with the MOH and IDAI, the Indonesian pediatric association, to develop a "Zinc and ORS" campaign. Multiple iterations of a public service announcement (PSA) were developed targeting mothers 18 to 35 years of age, living in urban and rural areas, across socioeconomic quintiles.

Varying concepts for the PSA were tested with mothers. Final versions were publicly endorsed by senior ministry officials and developed for

POUZN aired nationally television PSAs spots endorsed personally by the Minister of Health of Indonesia

both television and radio campaigns in five different languages, with both 60 and 30 second spots.

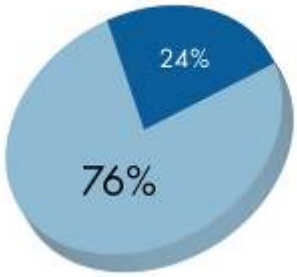
The PSA campaign saw national distribution. Spanning nearly 45 days (from May 17, 2010 to June 30, 2010), six television stations aired the advertisement 248 times. Radio spots were aired 5,550 times across 45 radio stations in 35 different cities.

Further encouraged by efforts to grow the market, two new manufacturing partners launched two additional zinc brands. This brought the total number of companies in the marketplace to 10, supplying zinc for both the public and private sectors, in both syrup and tablet form, across high and low price points. Zinc products were distributed at 5,650 out of 7,400 pharmacies nation-wide. Nearly 100 wholesalers carried zinc products.

Public sector efforts grew in anticipation of greater demand. Nearly 2.6 million doses were tendered, an almost triple-fold increase year-over-year. In support of these efforts POUZN collaborated with the MOH on revisions to IMCI guidelines and a Diarrhea FAQ booklet.

Detailing efforts also continued. Over 2,000 out of 3,000 pediatricians were visited regularly by manufacturing partners' sales representatives. Over 10,000 GPs (out of 50,000) were reached at 477 rural and urban DHOs in 33 provinces nation-wide. A strong consumer push had begun, expanding the breadth of POUZN intervention efforts across all levels of the cascade. The next section offers a preliminary assessment of programmatic outcomes associated with these efforts.

FIGURE 6: Zinc Sales in Pharmacies Nationwide



Over three-quarters of all pharmacies nationwide carried zinc by the end of the third project year
.

ASSESSING RESULTS:

Momentum through Caregivers

- POUZN launched a national radio and television campaign, airing spots on 6 television stations and 45 radio stations in 35 different cities.
- Public sales continued growth with sustained public sector outreach, seeing a nearly 2.6 million course tender for zinc by MOH officials.
- Detailing efforts continued, reaching more than 2,000 pediatricians and over 10,000 GPs at 47 rural and urban DHOs in 33 provinces nationwide.

PROGRAMMATIC OUTCOMES

POUZN Indonesia invested in series of targeted interventions over three years to accomplish the following:

- Create an enabling environment through support for clear national guidelines, and continuous public sector investment.
- Create a vibrant, competitive market for zinc in which multiple Indonesian commercial companies—manufacturers, distributors, and marketers—would produce, distribute, and promote high-quality and affordable zinc.
- Influence the prescribing behaviors of health providers and generate demand among caregivers.
- Encourage appropriate use of zinc in combination with ORT as a diarrhea treatment and prevention measure by caregivers nationwide.

A variety of metrics were tracked throughout the project, including sales data, market entry figures, and formative research findings. In support of these efforts POUZN also conducted outcome assessments of both the Bandung City/Bandung District pilot and national provider and caregiver zinc-related behaviors. Findings related to the goals above are presented immediately below. They are followed by additional findings specific to the pilot and mass media effort.

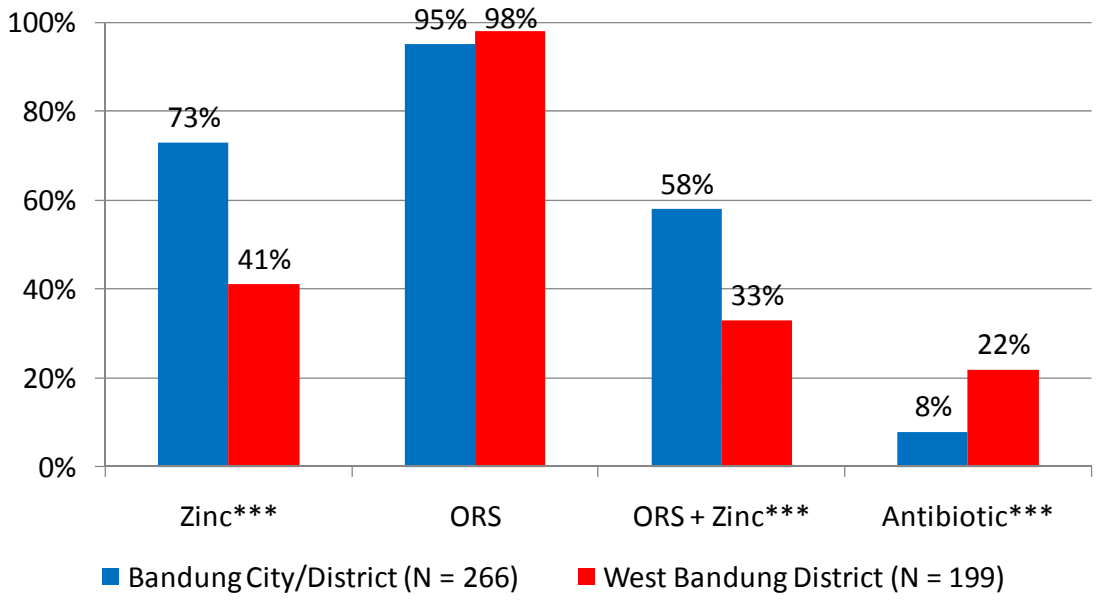
AN ENABLING ENVIRONMENT

POUZN efforts saw early adoption by senior government officials:

- IMCI and National Diarrhea Program guidelines were updated to include zinc with ORT within months of project startup.
- B-POM agreed to fast track zinc registration for manufacturing partners, cutting expected approval times from eighteen to nine months for new zinc products.
- B-POM agreed to register zinc treatment as a pharmaceutical drug, not a nutritional supplement, and to allow over-the-counter (OTC) applications from manufacturers.
- Government officials sent a letter to the Indonesian Pharmaceutical Manufacturing Association (PMA) requesting interested members to manufacture zinc treatment in accordance with WHO/UNICEF recommendations.
- A consistent set of zinc with ORT messages was developed and adopted universally across public, private, and development sectors for promotion through conferences, trainings, detailing, and medical publications.
- Zinc was listed as a "program drug," ensuring that it could be purchased by MOH staff for distribution to provinces and districts across the country.
- Zinc was not included in the NEDL, limiting its widespread use in hospitals and health centers.

Zinc treatment gained the support of pharmacists.

FIGURE 7: Zinc Prescription Patterns Among Midwives for Last Case of Diarrhea



Base: All midwives.
*Statistically significant: * p <= 0.05; ** p <= 0.01; *** p <=0.001*

A COMPETITIVE MARKETPLACE

Indonesian zinc production went from no companies manufacturing and selling zinc to a competitive marketplace co-promoting zinc and ORS:

- In 2007 no companies manufactured or sold zinc in Indonesia. As a result of POUZN intervention efforts, 10 companies offered 13 different products to Indonesians in 2010.
- A variety of products are currently available, including tablets, dry syrups and syrups.
- Prices range from roughly $0.65 to $3.50 per course accommodating a range of affordability.
- Zinc is currently available in community health centers and health posts, hospitals, pharmacies, clinics, drugstores and through midwives, pediatricians, and general practitioners (AED, 2010).

PROVIDER KNOWLEDGE AND PRACTICES

Provider outcomes related to treatment patterns are truly encouraging. The evaluation compared midwives who received POUZN-supported training (in Bandung city/district) with those who had not (in West Bandung). Both groups were exposed to the national mass media campaign. This difference afforded program staff the opportunity to assess the value of mass media alone versus the value of mass media in combination with interpersonal communication

- A large proportion of midwives generally give zinc to children with diarrhea under the age of 5 (nearly 80 percent in high-intensity intervention areas). Figure 7 shows that midwives prescribed zinc in last case of childhood diarrhea at very high rates (73 percent among those who received POUZN training vs. 41 percent of the comparison group).

TABLE 2: ORS/ZINC USE FOR THE TREATMENT OF CHILDHOOD DIARRHEA

	% Caregivers	
	Bandung City/District	West Bandung
Treated with zinc	27%	21%
Treated with ORS	48%	49%
Treated with zinc plus ORS	16%	13%
Total number of caregivers	340	80

Base: Caregivers from the random and booster sample combined who gave medicine to a child suffering from diarrhea in the past two weeks.

- A large proportion of the providers that prescribe zinc to children with diarrhea (97 percent in high-intensity intervention areas and 85 percent in lower-intensity
- intervention areas) recommend that it be taken 10 days or more (optimal regimen).
- Bandung City/District midwives prescribed zinc with ORS in last case of diarrhea at significantly higher rates (58 percent) than their West Bandung counterparts who did not receive POUZN training (33 percent).
- Significantly more midwives in Bandung City/District than in West Bandung said that they were informed about the use of zinc for the treatment of diarrhea.

CAREGIVER KNOWLEDGE AND PRACTICES

While provider related outcomes were very positive, there was no statistically significant change among caregivers regarding any key treatment practices.

- The indicator with significant improvement is knowledge; over one in five caregivers (22%) know that zinc is effective for treating diarrhea, up from 2 percent at the program's baseline. In addition, at end line, caregivers in Bandung City and Bandung District, heard such messages at significantly higher rates than those in West Bandung
- The percentage of randomly selected caregivers who said that they gave zinc to their child who had diarrhea in the past two weeks increased from 5 percent at baseline to 16 percent at end-line but the increase was not statistically significant.
- Augmenting the random end-line sample with an oversampled population of caregivers with children who suffered from diarrhea in the past two weeks enabled a comparison of caregiver usage trends between Bandung City and Bandung District, but this difference was not statistically significant. Comparison figures are shown in Table 2 below.
- Caregivers in Bandung City/District reported that they had heard about zinc as a treatment for diarrhea at significantly higher rates (29 percent) than those in West Bandung (21 percent).
- Caregivers in Bandung City/District who gave zinc to their children sick with diarrhea in last two weeks were more likely to give it for the full recommended course of ten days (37 percent) than their peers in West

Bandung (18 percent) (however, difference was not statistically significant).

IMPLICATIONS

Broadly speaking, intermediate strategies may succeed quickly, but changing provider and caregiver behaviors on a national level is likely to take much longer. An enthusiastic and well experienced government made substantial changes quickly. The private sector invested early and expanded rapidly. However, broad changes in provider prescriptions and caregiver treatments lagged with only 16 percent of caregivers giving zinc. This outcome offers a realistic perspective on what is achievable at the outset under relatively positive conditions for change (a motivated public sector and a capable and willing private sector).

Findings may suggest, however, that uptake will increase with awareness, and that awareness can make substantial strides quickly. Correlation analysis showed a very strong association between those who heard zinc messages and used zinc among those who gave medicine to a sick child in the last two weeks.[1] This could be promising, as the nearly 20 point increase in caregiver knowledge of zinc likely occurred toward the end of the project when program staff began focusing on caregivers through the national media campaign.

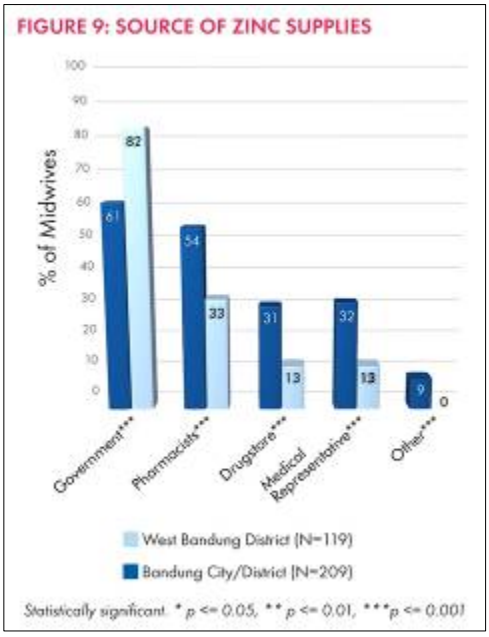
Mass media alone, however, is not likely a panacea. Instead, mixing communication methods may serve as the strongest strategy for enhancing uptake. Midwives in areas where POUZN provided additional training in addition to being exposed to the zinc mass media campaign prescribed ORS/zinc, or zinc alone, at significantly higher rates than their counterparts in an area where there was no training in addition to the zinc mass media campaign.

Additionally, provider-oriented interpersonal communication appears to facilitate changes in knowledge among both providers and caregivers. Significantly more midwives in areas where POUZN conducted trainings and follow-up detailing were informed about the use of zinc for the treatment of diarrhea than their counterparts in a locale where people received messages about the use of zinc for the treatment of diarrhea through training alone or mass media communication alone. Caregivers in areas where healthcare providers received additional training heard zinc-related messages at significantly higher rates than those where no such training was provided.

Midwives in Bandung City/District cite public and private sector as diverse sources of zinc supply, while an overwhelming majority of midwives in West Bandung cited the government as a source of supply for zinc.

It is also important to remember that in a country with a mix of strong public and private health systems, access to medicines should span sectors.

FIGURE 9: SOURCE OF ZINC SUPPLIES



[1] Pearsons R

Caregivers who treated childhood diarrhea with zinc said they obtained it primarily from community health centers. Midwives in areas where POUZN training was provided cited a variety of public and private sources of supply for zinc. An overwhelming majority of their counterparts elsewhere cited the government only as a source of supply.

LESSONS LEARNED

In nearly three years of implementation, POUZN Indonesia helped to establish a marketplace of ten companies and thirteen different zinc brands. The Indonesian government developed a series of policies conducive to provider adoption and prescription. Private manufacturers began investing in non-traditional marketing strategies, reaching out to health providers not typically a part of their promotion. On the heels of these efforts, the central government recently tendered a procurement for nearly 2.6 million courses for distribution in the public health system nationwide. In addition, POUZN Indonesia anticipates that nearly 1 million zinc courses will be sold in the private market in 2010, yielding a nearly 80% increase in year-over-year zinc sales. Lessons articulated below are intended to support program design for further work in Indonesia or other countries as applicable.

1. **Coordinating outreach among the public and private sectors can substantially accelerate success.** USAID established an Indonesia assessment team to identify opportunities and needs in both the public and private sectors. As a result of the assessment, POUZN coordinated complementary outreach approaches across both sectors. The project served as an honest broker for public health, catalyzing activity by helping to fully mobilize the potential capabilities of each sector. Doing so accelerated market entry and product distribution by quickly matching public policy incentives and guidance with private sector capacity and resources. Efforts in both sectors now persist, even in the absence of POUZN funded interventions.

2. **The balance between supply and demand creation is a delicate one and should be approached carefully.** Demand without supply is a risk to program success. Supply without demand risks dis-incentivizing private sector investment. Efforts should carefully coordinate zinc introduction in ways that match recognition of the need with availability of the product. In the case of Indonesia, this meant ensuring a supportive public policy environment while building private manufacturing capacity, educating clinicians, and developing coordinated messages across both the public and private sectors.

3. **A sustainable marketplace for a new product can be created quickly under the right conditions—however, sustained efforts are needed.** Once producers recognize the value that a new product offers them, they will contribute their own resources, as long as appropriate public policy components are in place. Guidelines need to be updated. Registration processes need to be streamlined. Health practitioners need to be well informed. With this foundation, Indonesia went from no manufacturers of zinc to ten manufacturers selling thirteen different products in less than three years' time. However, disparities in treatment exist. Sustained efforts are needed to change well entrenched prescription and caregiving behaviors for a product as yet unknown to many for its effectiveness.

4. **Competition spurs innovation and helps increase demand and availability of the product.** As hypothesized, the establishment of a marketplace led to diversity in products, prices, and distribution, increasing both availability and access to the product. Additionally, as more manufacturers entered the marketplace, the level of outreach multiplied, with additional marketing arms and existing distribution relationships brought to bear on zinc promotion.

5. **A motivated public sector is a valuable facilitator for success.** A public sector that is motivated to establish policies facilitating adoption of zinc (e.g., establishing a timely registration process, approving zinc as an essential drug) can serve as a catalyst for both private sector investment and public sector distribution. This is especially the case in environments such as Indonesia, where the public sector provides a significant portion of care. In all cases, the public sector is essential for enabling activities such as establishing zinc as a programmatic drug and incorporating it into national diarrhea guidelines.

Indonesia went from no manufacturers of zinc to ten manufactures selling thirteen different products in three years' time.

6. **Private partners operate within a disciplined decision-making framework that should be understood and spoken to.** It is their financial responsibility to their shareholders to continuously choose investments yielding the strongest returns. Zinc promoters should be prepared to make and demonstrate the business case, and to pursue other options when the business case is not there. POUZN successfully convinced private industry in Indonesia to both invest in zinc production and expand its outreach to key influencers when the business case for doing so was not originally apparent. Much of this outreach persists. It did so by working with private partners to outline a viable business opportunity worthy of investing scarce corporate resources. When the business case was not there (e.g. relatively small market could not justify industry-led costly mass media), POUZN supplemented industry efforts with its own resources.

7. **Key opinion leaders in both the public and private sectors (including top pediatricians) are crucial zinc champions.** Once they sign on, their endorsement attracts the support of others in the health sector through a cascade of influence reaching other pediatricians, general practitioners, drug sellers, and other practitioners. This is a critical component of an enabling environment, as it facilitates uptake in treatment.

8. **By carefully assuming initial risks, donors can pave the way to sustainable indigenous interventions.** USAID assumed an initial amount of risk by investing in diarrhea prevention through POUZN. POUZN used this investment to demonstrate the viability of zinc production and sales to the private sector. It simultaneously encouraged valued enhancements in public policy and practice. By strategically investing limited resources to attract and build investments over time, the project has increasingly realized what is now a largely sustainable indigenous intervention to reduce childhood mortality associated with the incidence of diarrhea.

9. **Establishing common messages agreed to by both sectors is a useful way to amplify promotion and to help assure quality outreach.** When messages are consistent, outreach across sectors is complementary. Furthermore, when both sectors understand and have agreed to the ground rules, promotional and distribution activities can proceed with little need for adjustment. A clear rationale exists whenever adjustment is necessary (e.g., messaging is off, or a product does not meet agreed-upon dosages).

10. **Promoting "diarrhea treatment" versus "zinc treatment" can build on initial popularity, leveraging existing recognition of ORS (if successful), and reinforce ORT.** Indonesia had already seen strong successes in the reduction of diarrhea prevalence. Treatment was well understood and popular among caregivers and the health community. Oralit, a popular ORS brand, was well known, though its use was declining. Leveraging "diarrhea" as opposed to focusing on "zinc" helped to build on an existing awareness for treatment, while at the same time reinforcing the need for ORT as an established mainstay of diarrhea management.

Community health workers of a *posyandu* educating caregivers directly.

11. **Combining interpersonal communication and mass media may enhance uptake among providers and caregivers.** Mass media may serve as an effective tool for raising awareness among caregivers. However, interpersonal communication, targeting health professionals is critical to generate, prescriptions and usage, together with strengthening caregiver compliance with the recommended 10-day regimen. Private sector reticence to invest in zinc-related mass media (as mentioned above) should be noted for future program planning.

A LONG-TERM VISION

Having established an enabling environment, spurred competition and production through the development of a robust marketplace, and encouraged national promotion across the cascade of influence, USAID Indonesia is investing in a fourth year of programming to build on POUZN's lessons learned and address relative shortfalls.

Gaps remain in promotion to health providers at the lower echelons of the cascade. Supply gaps also persist. Not all pharmacies carry zinc, and importantly, zinc is not listed in the national essential drug list (NEDL), limiting procurement and demand via public sector treatment facilities across Indonesia. Lastly, direct-to-caregiver outreach is relatively nascent with room for intensification.

The project is now focusing on saturating health providers with zinc promotion through continued collaborative efforts with manufacturing partners. The objective is to support and influence additional detailing efforts that reach increasingly lower levels of the cascade. It also aims to achieve complete coverage of pharmacies nationwide with at least one brand of zinc in each pharmacy, and is working in collaboration with MOH officials to train provincial and district health officers nationwide.

Additionally, in preparation for the essential drug list review, the project is working with key opinion leaders and public sector partners to establish safety evidence in hopes of allaying previous concerns about the treatment. Doing so could establish zinc on the 2011 NEDL, enabling much broader public sector purchase and distribution of the product.

Lastly, the project intends to continue interpersonal and mass media communication efforts to reach caregivers directly. However, with the reluctance of the zinc partners to invest in disproportionate costs to their expected return, this task rests on the shoulders of the public sector and donors. The hope is to establish a more continuous public education effort that supplements "push" strategies atop the cascade with "pull" requests for zinc treatment from caregivers at the bottom of the cascade.

REFERENCES

AED. 2010. *Promoting Zinc and ORS for the Management of Childhood Diarrhea in Indonesia: A Research Brief.* Draft submitted to USAID September 21, 2010.

BPS Statistics Indonesia, National Family Planning Coordinating Board, Ministry of Health, Macro International. 2007. *Indonesia Demographic and Health Survey*.

Nielsen. 2009. *Zinc Behaviors at the Caregiver/Household Level - Baseline Survey*. Submitted to AED May 8, 2009.

Saadé, Camille, Slater, Sharon. *Mobilizing the Commercial Sector for Public Health Objectives – A Practical Guide,* a BASICS - UNICEF publication, July 1996

WHO/UNICEF. 2004. *Joint Statement on Clinical Management of Acute Diarrhea*. Available at http://www.who.int/child_adolescent_health/documents/who_fch_cah_04_7/en/index.html.

World Health Organization et al. 2007. *Production of Zinc Tablets and Zinc Solutions*. Geneva: WHO.

WHO/UNICEF. 2009. *Diarrhea: Why Children Are Still Dying and What Can Be Done*. New York: NICEF.

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