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# QUALITATIVE RESEARCH FOR A ZINC TREATMENT PROGRAM IN NEPAL: FINDINGS AND RECOMMENDATIONS



October 2006

This publication was produced for review by the United States Agency for International Development. It was prepared by Keshab Prasad Adhikari, Laxman Singh Kunwar, Vicki MacDonald, and Mahesh Paudel for the Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) project.



## **POUZN Research Report No. 1**

**POUZN Research Report Series:** POUZN's research report series addresses important issues of childhood diarrhea prevention and treatment focusing on point-of-use water disinfection and zinc treatment. The papers are disseminated to a broad audience, including donor agency representatives, commercial and private sector partners, policy makers, technical advisors and researchers. POUZN staff and external reviewers review all papers.

**Recommended Citation:** Prasad Adhikari, Keshab, Laxman Singh Kunwar, Vicki MacDonald, and Mahesh Paudel. October 2006. *Qualitative Research for a Zinc Treatment Program in Nepal: Findings and Recommendations*. Bethesda, MD: The Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project, Abt Associates Inc.

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**Contract/Project No.:** GPO-I-00-04-00007-00 Task Order 5

**Submitted to:** John Quinley, Health and Child Survival Advisor  
USAID Mission to Nepal, Office of Health  
Kathmandu, Nepal

John Borrazzo, Environmental Health Team Leader, CTO  
Emily Wainwright, Technical Advisor for Micronutrient Programs  
Bureau for Global Health  
Division of Health, Infectious Disease and Nutrition  
U.S. Agency for International Development



Abt Associates Inc. ■ 4800 Montgomery Lane, Suite 600 ■  
Bethesda, Maryland 20814 ■ Tel: 301.913-0500. ■ Fax: 301.828-9633  
■ [www.pouzn.com](http://www.pouzn.com) ■ [www.abtassoc.com](http://www.abtassoc.com)

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- Population Services International
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## **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government



# ABSTRACT

USAID's Social Marketing Plus for Diarrheal Disease Control program (POUZN – implemented by Abt Associates and Population Services International) and the Nepalese Ministry of Health and Population (MOHP) are at the forefront of international efforts to introduce zinc as the treatment for childhood diarrhea in the public and private sectors. The Nepal MOHP Division of Child Health and POUZN are working together to pilot zinc introduction programs in several districts with the intention of using the results to launch a national zinc treatment program. As a basis for the development of communication campaigns to support the launch of zinc in both sectors POUZN contracted with the Central Department of Population Studies, Centre for Population Research and Training of Tribhuvan University to conduct a qualitative study of diarrhea treatment practices in Nepal. Results were based on focus group sessions with caregivers from varying socio-economic subgroups and in-depth interviews with 30 pharmacists from the Kathmandu valley. Encouraging were findings that diarrhea symptoms and danger signs were well-understood, that oral rehydration therapy is both commonly requested and used by caregivers and “prescribed” by pharmacists, and that caregivers are amenable to using zinc as a diarrhea treatment if it proves effective. The initial phase of the formative research also identified a number of issues that will need to be addressed in both educational and promotional campaigns that will accompany the launch of the program. Both caregivers and pharmacists have long associated zinc with vitamin supplements rather than as a pharmaceutical treatment for illness. The challenge will be to convey the concept of zinc as a high quality essential diarrhea treatment rather than as an “extra” or adjunct treatment or supplement. It is clear from the research that the behavior change messages must address the quality of the product, how zinc works to decrease the duration and severity of diarrhea and to prevent future bouts of diarrhea, the need to continue to use oral rehydration therapy (ORT) to prevent dehydration, the need to take the full 10-day regimen to get the maximum protective benefit, cost and treatment effectiveness of zinc in comparison to antibiotics and anti-protozoals, and the nature of side effects.



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# ACRONYMS

<b>FGD</b>	Focus-group discussions
<b>IEC</b>	Information, education, and communication
<b>MCHW</b>	Maternal Child Health Worker
<b>MOHP</b>	Ministry of Health and Population
<b>NDHS</b>	Nepal Demographic and Health Survey
<b>ORS</b>	Oral rehydration salts
<b>ORT</b>	Oral rehydration therapy
<b>POU</b>	Point-of-use
<b>POUZN</b>	Point-of-use Water Disinfection and Zinc Treatment (Social Marketing Plus for Diarrheal Disease Control project)
<b>PSI</b>	Population Services International
<b>UNICEF</b>	United Nations Children's Fund
<b>USAID</b>	United States Agency for International Development
<b>WHO</b>	World Health Organization



# ACKNOWLEDGMENTS

Thanks to the Central Department of Population Studies, Centre for Population Research and Training at Tribhuvan University and the Centre's research team: Keshab Prasad Adhikari, coordinator; Laxman Singh Kunwar, team member; Kamala Lamichhane, research associate; Chitra Kala Dhakal, field investigator; Nagendra Bhandari, field investigator; and Netra Prasad Khatiwoda, field investigator. We also thank Population Services International and its Kathmandu office for managing and supporting the research contract and for its editorial assistance.



# EXECUTIVE SUMMARY

The Central Department of Population Studies at the Centre for Population Research and Training at Tribhuvan University conducted this study on behalf of the United States Agency for International Development (USAID)'s Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) project. The study's objectives were to understand the attitudes, practices, and beliefs surrounding home management of childhood diarrhea; obtain feedback on the use of oral rehydration salts (ORS) and zinc tablets among caregivers of children under 5 years old; explore private-sector health providers', pharmacists', and pharmacist's assistants' experience advising their customers about childhood diarrhea and treatment methods; and inform the development of communication messages and a training curriculum that will encourage the correct use of zinc as a treatment for childhood diarrhea.

The study, which took place in the Kathmandu valley, consisted of six focus groups of caregivers from three socioeconomic categories using a focus-group guide and 30 in-depth interviews with pharmacists and drug sellers using a semi-structured interview schedule. The POUZN project provided both the focus-group guide and the interview schedule.

The findings indicate that caregivers understand the causes of diarrhea and the symptoms of severe dehydration for which care outside the home should be sought. Caregivers appeared to understand and practice appropriate home-based treatments, including increased liquid and food intake. Caregivers seek medical attention from the local medical shop if the child has continuing diarrhea or diarrhea with a fever. If the drugs provided there fail to stop the diarrhea, the child is taken to the hospital.

Medications are prescribed for five to seven days but are not typically given to the child after the diarrhea stops and he or she has re-engaged in normal activities. Caregivers had never heard of zinc or tablets containing zinc for treating childhood diarrhea. They are amenable to trying the product, however, preferring a syrup or soluble tablet with an acceptable smell and taste in an identifiable pack that is easy to open.

Pharmacists and drug sellers are acquainted with remedies for diarrhea and dysentery, generally prescribing increased fluids, ORS, and antiprotozoals. For dysentery and other complicated cases of diarrhea, they also prescribe antibiotics. The average cost of treatment ranges from 50 to 100 Nepalese rupees. Pharmacists in Nepal have no knowledge of zinc as a treatment for diarrhea; rather they associate it with a range of nutritional supplements and multivitamins. Pharmacists and drug sellers expressed interest in introducing zinc, but the price they suggested indicates that they still categorize it as a supplement, rather than as a medical treatment that would replace the antiprotozoals.

Information, education, and communication materials for caregivers should address how zinc decreases the duration and severity of diarrhea and the likelihood of future diarrhea episodes,

the need to continue to use ORS to prevent dehydration, the need to take the full 10-day regimen to get the maximum benefit of treatment, the product's quality, potential side effects, and cost, and treatment effectiveness of zinc compared to antibiotics and antiprotozoals.

Training for pharmacists and both public- and private-sector health providers should concentrate on the new WHO/UNICEF-endorsed standard diarrhea treatment protocols and clarify misconceptions about zinc as an adjunct treatment or supplement versus its application as a quality and essential treatment for diarrhea. Prescribing unnecessary antidiarrheals for childhood diarrhea also should be discouraged during training

# I. INTRODUCTION

## I.1 BACKGROUND

In its 2003/2004 annual report, the Department of Health Services of Nepal's Ministry of Health and Population (MOHP) stated that diarrhea results in 787,000 cases of illness treated in public health facilities and causes 17,000 deaths annually. It contributes to malnutrition in a substantial number of children as well. In response, the Nepal MOHP is making concerted efforts to control diarrhea. The government has adopted the Control of Diarrheal Disease program, which emphasizes both oral rehydration therapy (ORT) in the home as well as the use of standardized packets of oral rehydration salts (ORS) marketed under brand names *Jeevan Jal* and *Nava Jeevan* through both public and private distribution channels. The Ministry is now poised to add zinc as a prescribed treatment for diarrhea—a new yet effective treatment that reduces the duration and severity of diarrhea episodes. USAID requested the assistance of the POUZN project, the U.S. government's vehicle for preventing and treating diarrhea through point-of use (POU) water disinfection and zinc, to implement this new program. POUZN, managed by Abt Associates, Inc. and Population Services International (PSI), engages the private sector (commercial and nongovernmental organizations) in social marketing and mass-media communications to promote behavior change and zinc usage to the target population.

In preparation for the launch of a zinc treatment program, the Central Department of Population Studies at Tribhuvan University was selected to research treatment practices for diarrhea, including the acceptability of a new dispersible zinc tablet, through focus-group discussions (FGDs) with caregivers of children under 5 years old and in-depth interviews with pharmacists and drug sellers. The results will be used to develop targeted product-related materials and messages to increase the awareness of and demand for zinc in Nepal. In addition data collected in this survey will be used to develop a training curriculum for health workers and pharmacists to enhance their understanding of the effectiveness of zinc and to improve their counseling skills relative to the household treatment of diarrhea.

### I.1.1 DIARRHEA INCIDENCE IN NEPAL

The 2004 United Nations Children's Fund (UNICEF) *State of the World's Children* reported that Nepal's mortality rate for children under 5 years old was 91/1000—ranking 54<sup>th</sup> of 189 countries. Life expectancy at birth is 60 years. The 2001 *Nepal Demographic Health Survey* (NDHS 2001) reported that 20 percent of all children under 5 years old had diarrhea in the two weeks preceding the survey. The incidence of diarrhea varies with the season; April to August is the high incidence period. During this time treatment in public facilities peaks at 90,000 episodes per month; even in the lowest months episodes of treatment remains at 45,000 per month (DOHS 2003/2004). Prevalence of diarrhea is highest among children 6 to 11 months old (34 percent) and 12 to 23 months old (30 percent) (NDHS 2001). The MOHP has

prioritized controlling diarrhea through preventive and curative strategies. Health programs to date have promoted ORT to reduce the severity of symptoms from dehydration.

According to the MOHP and 2001 NDHS, nearly all mothers of children under 5 years old in Nepal know about ORS packets (97.8 percent); however, only 32 percent of mothers administered ORS during a recent bout of diarrhea and only 27 percent increased their child's fluid intake. Taken together, about 46 percent practice oral rehydration therapy. Pills and syrups are widely used (37.5 percent) for infant and childhood diarrhea with or without ORS. Thirty-five percent of caregivers seek no treatment at all.

### **1.1.2 ZINC TREATMENT FOR CHILDHOOD DIARRHEA**

In 2002 the World Health Organization (WHO) identified zinc deficiency as one of the major risks to children's health, associating it with 10 percent of diarrhea cases, 6 percent of lower respiratory tract infections, and 18 percent of malaria cases, accounting for the deaths of 800,000 children annually worldwide. Substantial evidence has now demonstrated that, in conjunction with ORS or ORT, zinc therapy given for at least 10 days during and after diarrhea reduces the duration and severity of diarrheal episodes and can prevent new infections for two to three months after treatment. In May 2004 WHO and UNICEF endorsed the use of zinc supplements as a new safe and effective low-cost treatment of diarrhea for children in the developing world.

Public- and private-sector programs are being launched in Nepal in 2006 to introduce zinc treatment to diarrhea management protocols. A public-sector program in five pilot districts implemented in partnership with USAID's Nepal Family Health Project, UNICEF, the Japan International Cooperation Agency, and Plan International was launched in June. POUZN's role includes training public-sector health personnel in Kathmandu and then introducing zinc treatment through the private sector, primarily through pharmacies, drug sellers, and other service providers. The private-sector initiatives, including training providers and pharmacists, will continue in urban and peri-urban areas throughout Nepal in 2007. Pharmacies are the most important providers of care in Nepal's private sector. According to the NDHS 2001, 74 percent of people who seek treatment in the private sector use pharmacies as their source for care. Both the public and private sectors play an important role in the supply of pills and syrups to caregivers; however, according to the 2001 NDHS, the private sector is much more likely to recommend pills and syrups than the public sector. A limited retail audit showed that pediatric anti-amoebic syrups (metronidazole benzoate) are commonly sold in pharmacies for treating childhood diarrhea. The MOHP would like to replace the sale of unnecessary antidiarrheals with the sale of the new, proven, and effective zinc tablets.

## **1.2 OBJECTIVE OF THE RESEARCH STUDY**

The objective of this research was to gain an understanding of the perceptions surrounding diarrhea, diarrhea treatment behavior, and knowledge of ORS and zinc tablets among two target groups: caregivers of children under 5 years old (mothers and fathers) and private-sector health providers, including pharmacists and pharmacy assistants.

Specific research objectives were to

- understand attitudes, practices, and beliefs surrounding home management of childhood diarrhea and gain feedback on the use of ORS and zinc tablets from caretakers of children under 5 years old
- explore health providers' and pharmacists' experiences advising their customers about childhood diarrhea and treatment methods
- inform the development of communication messages and training curricula

Specific issues this study covers include

- terms used for different types of diarrhea and concerns about diarrhea
- caregivers' treatment practices during bouts of diarrhea
- treatment sources and advice-seeking behaviors
- perceptions about treatment after diarrhea
- perceptions about pricing for diarrhea treatment
- knowledge of ORS
- perceptions about antibiotics and antidiarrheals
- feedback about zinc (such as knowledge about its effectiveness and cost)

### **1.3 METHODOLOGY**

The study is based on six FGDs with caregivers (mothers and fathers) of children under 5 years old and 30 in-depth interviews with pharmacists and drug sellers in the Kathmandu valley. The FGDs were conducted in three different areas representing a mixed group of migrants and non-migrants from a peri-urban area, poor strata slum dwellers, and local indigenous communities. Details on the distribution and location of FGD participants are in Annex A. The FGD and interview guides provided by the POUZN may be found in Annexes B and C.

Four field researchers were hired and trained on the FGD and interview guidelines before initiating the fieldwork for the study. Field researchers included two females and two males. Female field researchers undertook FGDs and in-depth interviews with female respondents; males did likewise for male respondents. A member of the core research team accompanied FGD teams to ensure the quality and proper conduct of each FGD. Basic steps in conducting FGDs, such as allowing an open dialogue, maintaining confidentiality, and giving all participants an equal opportunity to speak, were maintained as much as possible.

The survey of 30 pharmacists and drug sellers was conducted July 1–10, 2006. The main areas the survey covered were Kalanki, Syuchatar, Kirtipur, Patan, Bouddhanagar, Bouddha, Jorpati, Ghattekulo, and Putalisadak, which are located in the FGD areas.

The qualitative information, consisting of issues, opinions, and perceptions regarding diarrhea treatment and the potential use of zinc, collected from the FGDs and interviews was transcribed, translated into English, and analyzed for common themes. The findings, conclusions, and recommendations from that information are presented in the remainder of this report.

## 2. CAREGIVERS' UNDERSTANDING OF DIARRHEA AND ACCOMPANYING TREATMENT PRACTICES

**Objective 1:** To understand the attitudes, practices, and beliefs surrounding home management of childhood diarrhea among caretakers of children under 5 years old, including terms used and concerns about diarrhea, caregivers' treatment practices during bouts of diarrhea, treatment sources and advice-seeking behaviors, and perceptions about treatment after diarrhea.

### 2.1 COMMON CHILDHOOD ILLNESSES AND RECOGNITION OF DIARRHEA CAUSES AND SIGNS

Common childhood illnesses mothers and fathers mentioned in the FGDs were colds and coughs, fevers, and diarrhea. Diarrhea was the most frequently reported disease in the slum and migrant/non-migrant communities.

#### 2.1.1 KNOWLEDGE ABOUT CAUSES OF DIARRHEA

Focus-group participants cited a number of causes for diarrhea, most of which are associated with a lack of cleanliness: eating unhygienic, leftover, or rotten food; eating food without properly washing one's hands; poor cleanliness of the surrounding environment; children playing in dirty places; and children drinking dirty or polluted water or water that was not boiled. A few participants mentioned inadequate food intake, malnutrition, and digestion problems.

*Children drink dirty, polluted, or contaminated water.* — Mother, Syuchatar

*Children eat leftover and contaminated food after flies have contact.* — Father, New Baneshwor

*Diarrhea is caused if the environment surrounding the house is dirty and polluted.*  
— Mother, Bagalamukhi; father, Syuchatar

*Nails on hands are dirty and not cleaned properly.* — Father, Bagalamukhi

### 2.1.2 RESPONSES ABOUT TYPES OF DIARRHEA

The frequency and intensity of discharge, substances present in the stool, and the resulting seriousness of the affliction differentiated the types of diarrhea were discussed. In some cases of diarrhea, the discharge is more frequent and the child becomes seriously ill immediately. In other instances, however, discharge is less frequent and the child plays and eats as normal. Participants reported that at the beginning of diarrhea episodes, children frequently had bad smelling and undigested loose stool. Likewise, they mentioned frequent watery discharge with a mix of blood and fat contents accompanied by vomiting as a more dangerous form of diarrhea.

### 2.1.3 UNDERSTANDING SYMPTOMS OF DIARRHEA

According to the participants, children demonstrated common symptoms before and during diarrhea episodes, such as stomach pain, lack of deep sleep, frequent nighttime crying, not playing, feeling weak, and looking thin and dehydrated. During this period children do not eat or breastfeed well. Participants further mentioned that during bouts of diarrhea children lose water from their body and are likely to sleep more because they are weak. Also, their skin fold increases and their eyelids shrink. FGD participants reported that children with diarrhea gradually become weak, thin, and lose weight; their mouths become dry; their faces turn pale; and they do not like to open their eyes.

*Crying with stomach pain, does not sleep during the night, does not like to play. — Mothers, Buddhanagar*

*Eyelids droop, child is thin, does not like to play, skin is soft and wrinkled. — Mothers, Bagalamukhi*

*In first stage, start of loose discharge; in second stage, develops dryness in skin; and in third stage, body dehydrates. — Father, Syuchatar*

*Due to excessive discharge of water, children look weak and thin. — Fathers, Buddhangar*

*Do not like to drink or suckle milk. — Mother, Syuchatar*

*Face and body turns dry, developing black spots around eyelids, lips turning dry and child likes to drink more water. — Description of dehydration given by mothers and fathers in Syuchatar, Buddhanagar, and Baglamukhi*

## 2.2 DIARRHEA AND DEHYDRATION TREATMENT PRACTICES

Participants from all three communities in the study (migrant/non-migrant, slum dwellers, and non-migrant indigenous) apply both traditional (home-based) and modern approaches when treating diarrhea and dehydration. There appear to be no major variances in treating different types of diarrhea. From the discussion it was evident that women were the major caretakers for children with diarrhea. At first they try to keep the child warm, giving him or her more

liquid food than usual and ORT solutions. Focus groups of mothers and fathers reported that they first give boiled water and salt-sugar solution. If that treatment does not control the diarrhea, they may use ORS (*Jeevan Jal* or *Nava Jeevan*). If caregivers feel that a cold caused diarrhea in a small child, then boiled mustard oil is applied to the child's body and he or she is kept warm.

Fathers' focus groups described the treatment steps as follows.

First, home-based practices:

*Give boiled water and salt-sugar solution; if not controlled give packeted ORS solution and*

- *feed soup of pulse/lentils and liquid rice*
- *breastfeeding as frequently as child likes*
- *feeding child more than usual to prevent from being weak and wasted*

Second step:

- *If [the first steps] do not cure, take to medical shops to see doctor.*
- *After taking to medicals give medicines and liquid solutions to the child as per their advice.*

Third step:

*Lastly, if not cured take to hospitals (Kanti, Patan, and private hospitals).*

Customary indigenous practices (such as giving rice-washed water, beaten rice with yogurt, roasted and chewed gram nuts and other nuts, and bananas) to children with diarrhea are often coupled with ORT (sugar-salt solution) or modern ORS (*Jeevan Jal*). If diarrhea is not controlled by home-based treatment methods and symptoms of dehydration appear, the child is taken to a local medical shop or clinic. If the medicine given there also fails to control the diarrhea, the child is taken to a hospital. A few respondents said that the child's grandparents are likely to restrict them from giving more liquid foods and ORT solutions to children with diarrhea.

Mothers' treatment practices are similar to the fathers' in the previous text box, but with the following additions:

- *If it is due to cold, massage with boiled mustard oil; keep child in warm clothes; give fruit juice, if child likes; give yogurt beaten rice, chewed roasted gram nuts, and other nuts, banana, rice washed water.*
- *For treatment of dehydration: Give more liquid foods than usual, as much as child likes to take; give ORT solution, fruit juice, boiled water, soup of pulses, liquid rice.*

Participants did not adjust their treatment for diarrhea based on the type of discharge. After taking the child to the pharmacist or hospital, however, they do follow the provider's instructions for medication and care. ORS/ORT supplementation may be accompanied by a prescribed liquid suspension antiprotozoal. Participants said that pharmacists and doctors rarely prescribe antibiotics for simple diarrhea unless it is accompanied by a fever.

*Generally we take the child to doctor first and give prescribed liquid medicine and ORS to child; if it does not work, we take the child to the hospital. — Mothers in Buddhanagar*

*Do not know name of the prescribed medicine by medical shops or doctors, however, it is liquid suspension in a small bottle and tastes like ginger and spices.*

*Medicines are generally given with water, ORS and liquid foods; the diarrhea medicines given to children are mostly in liquid suspension form, so we do not need to add other liquids. -- All groups*

### 2.2.1 COMPLETION OF PRESCRIBED MEDICATION AND TREATMENT

Although participants report giving the ORS or the home-prepared ORT solution and medicine that medical shops, doctors, and hospitals prescribe until diarrhea stops, they are less assiduous about completing the full dose—even though it has been prescribed for five to seven days. In general, medicine is taken as per the doctors' suggestions and given to children on time; however, the prescribed dose is rarely completed. Fathers in Syuchatar mentioned that only 70 percent of the dose is given. This behavior is a concern that communications should address. Other comments from the FGDs regarding the timing of feeding follow.

*If medicine is supposed to be given for five days, but the child recovers in three days and starts playing, we forget to give the medicine as we become occupied with other work. — Mothers in Syuchatar and Buddhanagar slums*

*In general, give the medicine for seven days; however, if the child recovers earlier, stop doing so. — Fathers, Buddhanagar slums*

### 2.2.2 PRICING AND COST OF EXISTING DIARRHEA TREATMENTS

The costs incurred treating diarrhea depend on the nature and severity of the affliction. If the diarrheal episode is serious and complicated, the cost of treatment is higher. According to the participants, the average cost for diarrhea medicine ranges between 30 and 50 rupees (prescribed antiprotozoals), but for more severe cases the cost can climb to 200 rupees. The price of medicine, however, is not as expensive as costs incurred when taking children to hospitals (i.e., costs of transportation and accommodations).

In terms of affordability, participants unanimously said that when it comes to children's medicine, cost does not affect their decision about purchasing it; they have to bear it. While low-cost alternatives would be preferable, caregivers of children under 5 years old do not consider medicine for diarrhea treatment expensive. ORS or ORT, along with a liquid suspension antiprotozoal in a small bottle, is the standard treatments for diarrhea. Based on the

FGD participants' valuation of the cost for treating diarrhea, it seems that one bottle is enough for treating an occurrence of diarrhea.

*Diarrhea treatment is not expensive; however, expense depends on the severity of the case. Some medicines are expensive. Expense can range from 15 to 200 rupees.*  
— Fathers and mothers, Syuchatar

*Cost of medicine is reasonable in medical shops; however, including travel, food and other costs, if we take child to hospital, costs rise (ticket fee, bed fee, buy medicine in shops, bus fare and tea and breakfast). Cost varies according to patient's situation, that is 50 or 60 to 100 rupees.* — Fathers in Buddhanagar

### 2.2.3 TREATMENT PRACTICES AFTER DIARRHEA

The following comments demonstrate parents' behaviors after their child's diarrhea stops.

*We stop giving importance to ORS and medicine; however, we continue to give the child more liquid foods (pulses and grains soup and liquid rice) and boiled water than normal.* — Mothers in Syuchatar

*As diarrhea is controlled, we give less ORS and medicines. Usually we give the child liquid rice, a liquid of pulses and grains, and more hygienic and nutritious food, although the child typically does not accept this diet.* — Fathers in Syuchatar

*After diarrhea stops the quantity of ORS is reduced; however, we try to complete the prescribed dose of medicine. We give increased amounts of liquid food and soup, although the child usually does not feel like eating. It is a practice to give yogurt-beaten rice, which is believed to benefit children and reduce diarrhea.* — Fathers in Syuchatar

*After diarrhea is controlled, we give rice, if the child wants it, and yogurt to stop diarrhea and vomiting. We continue with home-based medicines (such as yogurt and beaten rice, herbs, and chewed roasted nuts) and traditional foods.*  
— Indigenous mothers and fathers groups in Patan

## 2.3 INTRODUCTION OF ZINC TABLETS

**Objective 2:** Gain feedback on the use of ORS and the introduction of zinc tablets among caretakers of children under 5 years old.

### 2.3.1 ORS AND ORT

In response to questions related to the use of ORS or ORT when a child has diarrhea, caregivers unanimously said that they give more than the usual amount of fluid to a child. Rehydration substances include ORS bought from medical shops, a homemade salt-sugar solution, fruit juice, rice starch, and pulses or lentils soup with less oil or ghee. Participants said that ORS solution prepared in cooled boiled water is given frequently. One packet of ORS is

added to one liter of water and given within 24 hours of preparation. From this feedback it is evident that respondents in this survey possess basic knowledge about preparing ORS solution and feeding it to diarrhea-stricken children.

*ORT includes homemade fluids like soups of grains, rice starch, boiled water, and so forth. — Syuchatar*

*Prepare ORS by adding one packet in six teacups of boiled water. — Patan*

*As mothers, when we know a child has diarrhea, we start giving ORT; at first we use our own homemade fluids and then as advised by health and medical persons. ORS is found in nearby medical shops. We give this until diarrhea stops. — Mothers, all locations*

*Mothers give more liquid foods, soups of grains and pulses, starch of rice and fluids as ORT and Jeevan Jal as ORS during diarrhea. They prepare Jeevan Jal with cleaned boiled water and give frequently along with other foods and medicines. — Fathers, all locations*

*We know of no diarrhea cases that do not need ORT/ORS. — Fathers and mothers, all locations*

### 2.3.2 THE IMPORTANCE OF VITAMINS AND ESSENTIAL MINERALS

The FGD then turned to the importance of essential minerals to minimize reoccurrence of diarrhea in small children and to prevent them from being weak. Discussion issues included do children need nutrients and minerals and do mothers provide them when children have diarrhea? Awareness of zinc and its perceived importance when treating childhood diarrhea was also explored.

Issues regarding the importance of vitamins and minerals for children after diarrhea, the process of giving supplementary vitamins and minerals, women's experiences feeding soluble tablets to sick children, and responses to soluble zinc tablets along with their perceived importance and effectiveness were also explored. From the responses it is clear that while caregivers of children under 5 years old increase the amounts of nutritious foods and fluids they provide when children have diarrhea, they do not give vitamins and minerals unless a pharmacist or doctor prescribes them.

*After diarrhea, children need additional vitamins, minerals and nutrient foods; we give them prepared at home; we do not buy them from medical shops unless doctors prescribe. — Mothers, all areas*

*If we find a child very weak and thin, we give vitamins ourselves; otherwise, we give additional nutritional food, not the vitamins from medical shops. — Fathers, Syuchatar*

### 2.3.3 INTRODUCTION OF ZINC AS A DIARRHEAL DISEASE TREATMENT

Participants had never heard of zinc tablets; doctors and pharmacists had never prescribed them. The medicines most frequently prescribed are liquid suspensions in small bottles. Caregivers typically give the prescribed dose to a child in the bottle cap, measuring cap, or dropper that comes with the bottle. Only a few participants had fed soluble tablets (prescribed for diarrhea with a fever) to their children. Tablets usually are not given for fear that they might get stuck in a child's throat.

*I never give non-soluble tablets to children with diarrhea; if it is soluble, there would be no problem; otherwise I fear it will be trapped in throat. — Mother, Syuchatar*

*I give tablets mixed in water. It's a problem if it is bitter and the child does not like it; if so, I give with sugar." — Mother, Patan*

After learning about the basic features of zinc tablets and their importance to children with diarrhea, participants expressed willingness to use the product. They further added that all caregivers would like the product and would give it to their children during diarrhea as it becomes available in the market. Participants said that the zinc tablet is not difficult to feed to a child, nor is the process of feeding it difficult to understand. They added that mothers would not forget how or when to use as it is given with ORT or ORS. The only additional concern they had was about possible side effects.

*Giving the tablet with ORT/ORS is not problematic, hard to understand, or easy to forget; mothers would do it easily. — Fathers, all locations*

*There is no problem giving the proposed medicine with ORT/ORS; it is not a question of forgetting or remembering, no additional attention is required. — Mothers, Syuchatar and Patan*

After inspecting the blister pack provided by the research team and removing the tablets, participants said that taking out the tablets from the package was not difficult. Similarly, participants tasted the tablet after dissolving it in water. The caregivers said that the taste and smell were good and that children would like it. Participants inquired about the dosage and method of giving the product to children older than 5 years.

Participants, particularly in fathers' groups, however, were skeptical about the product's quality. They said that they could not determine the product's quality just by looking at and tasting it once. Participants said that only when zinc comes into the market and proves to be a good solution for diarrhea, would they accept the quality of product.

*Not difficult to open, smells like glucose or some vitamin medicine, sweet, quality might be good but not sure. — Mothers, Buddhanagar and Patan*

*Easy to open, smells good, but not in position to comment on quality. — Fathers, Buddhanagar*

*When produced under WHO standards, quality might be good. — Fathers, Svuchatar*

Regarding pricing for the tablets, participants said that they should cost less than they are currently paying for diarrhea treatments (on average 50 to 200 rupees). Mothers groups showed a willingness to pay a slightly higher price than did fathers groups. Fathers groups said that the price should be between 50 paisa and 1 rupee per tablet. Mothers were willing to pay 1 rupee per tablet.

*Per tablet could be paid 50 paisa to 1 rupee; if priced less would be better, since this is an additional medicine and not necessary. — Father, Patan*

*Per packet (10 tablets) not more than 20 rupees; however, price should be as little as possible — Mother, Syuchatar*

### 3. PHARMACISTS' AND DRUG SELLERS' KNOWLEDGE, ATTITUDES AND PRACTICES ABOUT DIARRHEA TREATMENT AND PRESCRIBING ZINC

**Objective 3:** To explore health providers' and pharmacists' experiences advising their customers about childhood diarrhea and treatment methods and their knowledge and attitudes toward prescribing zinc.

#### 3.1 BACKGROUND INFORMATION ABOUT PHARMACISTS AND DRUG SELLERS

The daily client inflow to pharmacies depends on the density of the community, the location of the pharmacy, the seriousness of the diseases, and the season. The pharmacies interviewed average 50 to 100 clients per day.

**TABLE 1—DISTRIBUTION OF PHARMACIES AND DRUG STORES BY NUMBER OF PEOPLE VISITED DAILY**

Number of people visited	Number of pharmacies and drug sellers
Less than 50	10
50 to 100	9
More than 100	11

The majority of products sold by pharmacists are designed to treat common colds, headaches, fever, diarrhea, dysentery, high blood pressure, diabetes, jaundice, and gastric complaints.

The common problems for which children are taken to pharmacies are common colds, fever, diarrhea, dysentery, jaundice, respiratory concerns, pneumonia, and boils. Respondents stated that they provide both advice and medications to their customers.

## **3.2 COMMON QUERIES AND RECOMMENDATIONS**

### **3.2.1 3.2.1 PARENTS' COMMON QUERIES ABOUT DIARRHEA TREATMENT AND MEDICATIONS**

Out of 30 respondents, 21 said that a client with a child having diarrhea asked for a specific medication or advice for treating the disease. Common queries include the following questions:

- What are treatment methods for controlling children's diarrhea?
- What are the right medicines for controlling continuous diarrhea? Can you give the dosage and instructions for taking them?
- My child is weak because of frequent discharge, has a fever, and has no appetite: what should I do?
- My child is suffering from dysentery and is weak: is it diarrhea or some other disease?
- My child is complaining of stomach pain and has diarrhea: what should I do?
- My child has watery and oily stool: what can I give her?
- My child has a swollen stomach, shows no interest in eating, and, while not in pain, does have loose water-like stool: what can I do?
- My child has been suffering from diarrhea for three to four days and is vomiting: will he recover on his own or should I take him to the hospital?
- What should be given for continuous diarrhea? Can we give glucose and water?
- During episodes of diarrhea, what food can and cannot be given?

### **3.2.2 COMMON ADVICE PROVIDED BY PHARMACISTS**

Common advice and counseling pharmacists dispense to parents of children with diarrhea include:

- provide more soft and liquid food items and boiled, clean drinking water; restrict the child's intake of meat and hot, sour, acidic, cold, and fatty food
- give plenty of ORS solution
- adhere to proper sanitation and cleanliness practices
- administer medicine regularly, as per the prescription

- if the child's condition does not improve, take him or her to the hospital immediately

### **3.2.3 CLIENTS' TYPICAL DESCRIPTIONS OF DIARRHEA**

According to the pharmacists, parents of children with diarrhea come to their shops and explain the following symptoms of diarrheal diseases:

- uneasy and swollen stomach
- frequent and watery discharge
- vomiting
- dysentery
- oily stool
- fever
- belching and gas

Pharmacists said that clients generally do not differentiate between types of diarrhea, nor do they have enough knowledge to ask for treatment suggestions or medicine by type of diarrhea. Almost all pharmacists, however, assured the interviewers that even though clients have no knowledge about the different types of diarrhea, the pharmacists prescribe different treatment for each kind after a detailed inquiry into the patient's symptoms.

### **3.2.4 DEMAND FOR ORS**

Eighteen pharmacists said that mothers or caregivers of children frequently ask for ORS, while the remaining 12 pharmacists said that mothers do not ask for ORS, but they prescribe it for children anyway and provide counseling about preparation.

## **3.3 COMMON MEDICINES GIVEN AND THE COST OF DIARRHEA TREATMENT**

Pharmacists claim that they include ORS in all prescriptions for treating diarrhea in children. Depending on the severity and type of case, antiprotozoals and antibiotics also are prescribed. Common medications for childhood diarrhea besides ORS, according to pharmacists, are in Table 2.

**TABLE 2—COMMON MEDICATIONS FOR CHILDHOOD DIARRHEA OTHER THAN ORS**

<b>Metronidazole compositions</b>	<b>Antibiotics</b>	<b>Others compositions</b>
Metronidazole Amzit Protogyl DF (liquid) Metron DF (liquid) Tinidazole (liquid) Diloxanide (liquid) Ceknidazole (liquid)	Septran Leperamide Norfloxine	Digestive enzymes Nalidixic acid Glucose and water through vein

In general pharmacists said that the cost for diarrheal medicines, along with ORS (for five days), ranged from 30 to 50 rupees with treatments for severe cases costing as much as 200 rupees. The cost of medicine varies by the amount needed and the number of days for which it will be taken. Generally mothers buy medicine for two to three days. Some mothers, however, buy three to five days worth of treatment. Only a few mothers buy the medicine for seven days. In response to being asked about return visits by the parents of children with diarrhea, 28 pharmacists said that caregivers revisit only if the diarrhea continues and there are no signs of it abating.

### 3.4 OTHER DRUG SELLERS AND REFERRAL PRACTICES

Out of the 30 pharmacists interviewed, 25 said that there are other types of drug stores in the locality. Ten such providers were *ayurvedic* medical stores (traditional medical providers found on the Indian subcontinent) while the rest were modern medical stores. This statistic demonstrates that there are a range of private-sector health service providers in and around Kathmandu Valley.<sup>1</sup>

The interviewed pharmacists said they tell clients to take patients to the nearest hospital if diarrhea continues, the patient becomes weak, and complications arise. Private-sector pharmacies and drug sellers are likely to refer children with diarrhea and other health problems to the Kanti Children Hospital, Teku Hospital, and Patan Hospital.

### 3.5 SOURCES OF KNOWLEDGE ABOUT NEW MEDICINAL PRODUCTS

The sources of pharmacists' knowledge of new medicines are

- medical representatives
- doctors

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<sup>1</sup> In Kathmandu it is common practice for pharmacists to have a reputable doctor's private clinic within the premises. These clinics, however, are open only at limited times as most of these physicians also work in public or private hospitals.

- training and orientation classes
- medical distributors and wholesalers
- professional associations
- the media (medical papers, the internet, radio, and television)

In response to being asked about what products they have available with mineral composition like zinc, all of the interviewed pharmacists said that they have products containing zinc and other essential minerals. Most of the products they sell in this category, which are in frequent demand, are

- iron tablets
- calcium
- vigoran
- folic acid
- multivitamins
- fortiplex
- vitamin B complex
- cefolin

### **3.6 CURRENT SELLING OF ZINC TABLETS AND SYRUPS**

The pharmacists all claimed to sell medicines with some composition of zinc in them. They did not know about zinc, however, as a treatment for diarrhea. Pharmacists claimed to be selling medical products containing zinc primarily for blood deficiency (anemia) and to increase the content of hemoglobin in the body. In addition, physically weak people, pregnant women, and people with loss of appetite are given medicines containing zinc to help them recover, prevent them from developing anemia, and increase their appetite.<sup>2</sup>

### **3.7 INTEREST IN SELLING DISPERSIBLE ZINC TABLETS**

All pharmacists in the study reported that medicines with zinc compositions sell well. If they had a dispersible zinc tablet, they thought it would do well in the market. But a tablet like the

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<sup>2</sup> These vitamin supplements usually contain iron, vitamin B complex, and other ingredients that are necessary for anemic and pregnant women and weak persons to increase the level of hemoglobin. Pharmacists, however, claimed these products also contain some percentage of zinc composition.

one demonstrated is not available. Pharmacists further said that when selling any drug they provide instructions to the client about how to use it and that all customers try to follow the instructions when giving the medicine to their child. Some of the pharmacists claimed that customers revisit them to clarify the proper method for taking medicine if they have any doubts.

Clients frequently ask for medicines that are effective quickly, affordable, and free from side effects. Some drug sellers tasted the zinc tablets; they liked the flavor and thought that children would like it as well, making the tables easy to administer.

### **3.8 PRICING OF ZINC DIARRHEA TABLETS**

The pharmacists thought that the retail price of the proposed zinc product needs to be as cheap as possible. The pricing pharmacists and drug sellers proposed is similar to what parents of children under 5 years old suggested in the FGDs: the majority of caregivers and service providers suggested a price of not more than 1 rupee per tablet. Almost all respondents were against matching zinc's price to that of other diarrheal products. According to them it is just an additional medicine to control diarrhea; therefore they suggested keeping the price lower than for other diarrheal products. A few respondents mentioned that the initial price could be low, but after zinc has proven effective it could be increased.

### **3.9 WILLINGNESS TO PARTICIPATE IN TRAINING**

All respondents expressed interest in participating in a training program. They also said that such instruction would be beneficial not only for promoting zinc tablets but also to gain knowledge they could share with their customers.

Out of 30 respondents, 25 were in favor of conducting such a training program on a Saturday (the others did not mention a specific day). Most of them suggested the time be in the morning if the class is on a weekday or in the daytime if it is on a holiday or Saturday. In addition, within Kathmandu Valley, pharmacists were willing to travel up to one hour to get to the training location. Convenient training sites might include nearby party palaces, hotel conference halls, community buildings, and health posts.

### **3.10 DEVELOPMENT OF POINT-OF-SALE MATERIALS**

Respondents were willing to put point-of-sale materials in their medical shops and clinics. They expressed interest in having a reference sheet and other handouts related to treating diarrhea and other diseases. Reference sheets and handouts are helpful to gain knowledge—for providers and the general public—and they would help popularize the products. Also, a diarrhea-treatment wall chart would make customers and pharmacists more conscious of treatment options.

## 4. CONCLUSIONS AND RECOMMENDATIONS

**Objective 4:** To inform the development of communication and marketing strategies and training curriculums.

### 4.1 KNOWLEDGE OF DIARRHEA AND DEHYDRATION

Diarrhea is a common childhood illness that affects migrant and non-migrant peri-urban residents; slum dwellers; and indigenous inner city residents. Caregivers are aware that eating unclean food, living in poor and unhygienic conditions, drinking water that was not boiled, playing in dirty places, eating with dirty hands and uncut nails, and eating rotten and leftover food can cause diarrhea and dysentery. Caregivers correctly identified the symptoms of diarrhea and the danger signs of the dehydration it can cause.

#### 4.1.1 RECOMMENDATION

While caregivers seem to have excellent knowledge about the causes of diarrhea and symptoms of dehydration, it would be prudent to reinforce the danger signs and the differences between moderate and severe dehydration when training community health workers, pharmacists, and drug sellers. Doing so would allow them to gather better information from caregivers and provide more accurate advice when ORS, ORT, and zinc are not sufficient and the child needs critical care at a health facility.

### 4.2 DIARRHEA TREATMENT PRACTICES

Caregivers provide children who are suffering from diarrhea increased amounts of nutritious foods, fluids, soups, liquid rice and starch, and juices when treating them at home. It was reassuring to learn that it is common practice to include home-based ORT treatments. If the situation does not improve, the child is taken to a nearby pharmacy, where a pharmacist likely will prescribe him or her liquid suspensions of antiprotozoals along with ORS. In fact, caregivers frequently request ORS from pharmacies during bouts of diarrhea. If a child has complicated diarrhea with a fever, only then are antibiotics prescribed. Parents believe that only a pharmacist or doctor can differentiate between the types of diarrhea and prescribe medicine. If the treatment the local medical shop prescribes fails to stop diarrhea, the child is taken to a hospital.

Once the diarrhea is controlled and symptoms disappear, caregivers return to previous feeding patterns and stop giving ORT and ORS. Caregivers purchase only the minimum amount of

medicine, usually a three to five day supply. The majority of caregivers do not ensure that the course of treatment the pharmacist or health care provider recommended is completed.

#### **4.2.1 RECOMMENDATIONS**

Pharmacists and other medical personnel are viewed as authority figures in the diagnosis of the severity and type of diarrhea and in the prescription of treatments. These authority figures should be cited as recommending zinc in promotional materials.

The communication campaign needs to:

- promote the use of ORT and ORS along with zinc to prevent dehydration so that caregivers understand that zinc does not replace ORS as a diarrhea treatment
- stress the importance of completing the full 10-day treatment regime to get the maximum protective benefit

### **4.3 ZINC AS A TREATMENT FOR DIARRHEA**

Although a new concept in diarrhea treatment, focus group respondents were amenable to trying zinc. They had no issues with the packaging, taste, or smell of the product. They preferred liquids (syrups) or soluble tablets rather than non-soluble forms of zinc, as they were concerned that non-soluble tablets may become lodged in the throat of a small child. Fathers were reluctant to comment on the quality of the product, not being familiar with WHO or UNICEF. Fathers also expressed a “wait-and-see” attitude towards using zinc as a treatment, indicating that they would use it if it works to stop diarrhea. Other issues included the side effects of the products and use by older children and adult members of the family.

#### **4.3.1 RECOMMENDATIONS**

Information, education, and communication (IEC) materials for caregivers should address how zinc works to treat and prevent future bouts of diarrhea, the quality of the product, and the potential side effects.

Given that most local caregivers are not familiar with WHO or UNICEF, it will be critical to identify and obtain the endorsement of a respected local authority on the quality of the product.

Although there was no specific mention in the FGD about caregivers’ expectations concerning how quickly treatment should stop diarrhea, clearly the reason for visiting a pharmacy is to obtain a treatment that will expedite recovery. IEC materials also must stress that not only will zinc shorten the period of diarrhea but that it has protective benefits as well. Program managers should monitor the practices and attitudes of caregivers who use zinc to determine if their expectations concerning limiting the duration of the diarrhea are met.

## **4.4 WORKING WITH PHARMACISTS AND DRUG SELLERS**

Pharmacists and drug sellers are an important conduit of information and source of treatments for diarrhea. Their typical advice to parents of children with diarrhea is to give full doses of medicine, along with increased fluids (including boiled water), ORS, and liquid food with no oil or fat. They also advise parents about hygiene and sanitation. The high use of ORT by mothers is encouraging. Only if the case is complicated or accompanied by fever are pharmacists likely to prescribe antibiotics, which are appropriate for dysentery and a few other instances. Pharmacists and drug sellers sell multivitamins containing zinc, but they consistently confuse zinc with iron, mentioning zinc as a treatment for anemia and for increasing hemoglobin levels. Although pharmacists showed a keen interest in introducing the proposed zinc product for diarrhea treatment, they continue to associate zinc with nutritional supplements—not as a medical treatment for diarrhea.

### **4.4.1 RECOMMENDATIONS**

Training for private-sector health service providers, including pharmacists and drug sellers, should encompass introduction of the 2004 standard WHO/UNICEF-endorsed treatment protocols, focus on how to provide counseling on product use and expectations, address misconceptions concerning the different roles of zinc and iron, and discourage the practice of prescribing unnecessary antidiarrheals for childhood diarrhea.

The training also should communicate that zinc is not just a supplementary and additional treatment, but it is a proven replacement therapy for control of diarrhea in children under 5 years old. Promotion materials should actively discourage the use of metronidazole and encourage zinc as a replacement for that therapy.

## **4.5 COSTS OF ZINC TREATMENT**

The current cost of diarrhea medicines at pharmacies and drug shops ranges from a low of 30 rupees to as much as 200 rupees per treatment. Pharmacists and caregivers are looking for a low-cost zinc product, priced at 1 to 2 rupees per tablet or 10 to 20 rupees for the 10-tablet blister pack. Given that the cost of the imported product is currently 30 rupees for the blister pack before distribution mark-ups, this low-cost recommendation is not feasible at this time.

### **4.5.1 RECOMMENDATION**

IEC materials should communicate to caregivers the cost and effectiveness of zinc compared to antiprotozoals, the reduction in travel and other costs of seeking care outside of their neighborhoods, and the effectiveness of zinc in preventing the reoccurrence of diarrhea



# ANNEX A: FOCUS GROUP SELECTION PARAMETERS

**TABLE 3—COVERAGE OF FGDS BY TYPE AND SIZE**

Coverage	Type of Place/FGD	Scope of Study (FGDs and Interviews)	FGD Size
1 Syuchatar VDC Ward 1 and 2	- Peri-urban combined- Migrant, non-migrant	- 1 FGD with 20-30 years aged Mothers of children under five	11
		- 1 FGD with 20-35 years aged Fathers of children under five	9
2. Buddhanagar, Sankhamul, KTM, Ward 10	- Slum area (Labor class)	- 1 FGD with 20-30 years aged Mothers of children under five	8
		- 1 FGD with 20-35 years aged Fathers of children under five	10
3. Bagalamukhi, Patan	- Urban indigenous (Pode Tole)	- 1 FGD with 20-30 years aged Mothers of children under five	8
		- 1 FGD with 20-35 years aged Fathers of children under five	8

Caregivers were identified and contacted with the help of local health workers mostly maternal child health workers (MCHWs), leaders/members of settlement reform committee of squatter (slum) settlements and office workers from the local indigenous communities. Pharmacists and drug sellers or their assistants were contacted by visiting their shops and establishing good rapport.

Homogeneity in participants, caste/ethnicity and migrants and non-migrants status was strictly maintained. Approaches adopted in reaching the respondents and research participants are summarized in Table 4.

**TABLE 4—APPROACHES ADOPTED IN REACHING AND IDENTIFYING STUDY PARTICIPANTS BY STUDY SITES**

Type of Groups	Study Sites		
	Syuchatar	Sankhamul, Baneshwor	Bagalamukhi, Patan
Mothers of children under 5	MCHW from local Health Post mobilized, helped to identify target women,	Squatter settlement reform committee members (Vice-chair), mobilized community,	A senior sweeper in Campus from the Pode settlement of Patan mobilized,
Fathers of children under 5	MCHW from local Health Post mobilized, helped to identify target women,	Squatter settlement reform committee members (Vice-chair), mobilized community,	A senior sweeper in Campus from the Pode settlement of Patan mobilized,

Pharmacists/Drug Sellers	Field Interviewers themselves identified and contacted	Field Interviewers themselves identified and contacted	Field Interviewers themselves identified and contacted
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In order to maintain confidentiality discussions were held in closed rooms where possible. If not, one assistant was mobilized to prevent outsiders from joining the group during the discussions. A group consisted of 8 to 11 people with homogenous characteristics.

All participants were encouraged to participate in discussion equally. Moderators tried to facilitate discussion by throwing the issues of discussion open to the floor, keeping discussion focused on proper issues and encouraging participants to participate equally, limiting dominant participants and encouraging other participants to put forward their opinions. Moderators maintained a full and free-flow discussion on the research topic using FGD guidelines and guided the discussion back to the topic if anyone diverted from it.

A note taker and record keeper were mobilized to take important notes and record the discussion using a tape recorder with consent of the participants. As it was difficult to gather pharmacists and/or their helpers at one place for the purpose of focus group discussions in-depth interviews were conducted with them.

Focus group participants were between 20 and 35 years of age with at least one child under 5 years old. All participants had some experience with treatment of diarrhea in their children and knew of common childhood illness. Caste/ethnic composition of the participants is given in Table 5.

**TABLE 5—CASTE/ETHNIC COMPOSITION OF PARTICIPANTS, BY PLACE OF STUDY**

Caste/Ethnicity	Mothers	Fathers	Total
Lama/Tamang	11	5	16
Gurung/Thapa Magar/Rai	5	3	8
Brahman/Chhetri	2	9	11
Newar	-	4	4
Pode (Deula)	8	6	14
Total	26	27	53

# **ANNEX B: FOCUS GROUP DISCUSSION GUIDE FOR CARETAKERS OF CHILDREN UNDER 5 YEARS OLD**

## ***I. Introduction - [1 minute]***

Welcome and thank you for taking time to participate in this discussion today. My name is [Moderator] and this is [note-taker] and we are working on behalf of an International NGO to help us to solve health problems of families in Nepal to give them more health choices. Your comments and those of other participants will help us to develop an effective program to improve people's health.

## ***II. Ground Rules - [1 minute]***

We are interested in all of your opinions and feelings. There are no right or wrong answers. We need your ideas, so any criticisms you have will not hurt our feelings. We encourage you to provide frank comments that will improve our study. Some of you may agree or disagree with each other, which is perfectly normal and we encourage you to openly share your ideas. Do not wait for the moderator to ask for your opinion, feel free to speak at any time. However, please try to avoid interrupting others while they are talking. Everyone will have a chance to speak and all ideas, concerns, and opinions are of value. The session will last approximately 1 - 1.5 hours.”

## ***III. Confidentiality - [1 minute]***

Everything that is said in this room is confidential and we will not tell anyone that you participated in this discussion. A tape recorder will record what is said so that we have an accurate account of your views to assist with improving the programs. My assistant will also take some notes to help us in this task.

Does anyone have any questions?”

## ***IV. Introduction of participants (Warm Up) - [2 minute]***

We would like each of you to introduce yourself. Also, [please tell us how many children you have and also tell me how old your youngest child is.]

## V. Research questions

### I. **Concepts and terms about diarrhea (10 minutes)**

I.1 All of you said you had a young child. Could you tell me what are the main illnesses of young children in your community/neighborhood?

I.2

- *If diarrhea mentioned:* You mentioned diarrhea. What causes diarrhea in young children?
- *If diarrhea not mentioned:* How about diarrhea—is it common also? What causes diarrhea in young children?

**Probe** for list of different causes

I.3 Are there different types of diarrhea that young children get? What are the different types and what are they called? (Note-taker should write different types on a flip chart for reference, unless this would intimidate low-literacy participants)

**Probe:** Which type of diarrhea usually starts first? Which type is more dangerous? Are there different types for babies and for older children?

I.4 What happens when a child gets diarrhea? What other symptoms do they have? What are your concerns when your child has diarrhea?

- *If mentioned dehydration:* I'd like to know more about dehydration.
- *If not mentioned:* What about dehydration—can that be a result of diarrhea?
  - How do mothers know if a child is dehydrated? What happens when a child gets dehydrated?
  - What do women in your community do when a child is dehydrated?

### 2. **Treatment process during diarrhea (10 minutes)**

❖ **Moderator to say:** Now we'd like to talk about what mothers do when a young child gets diarrhea.

- Are there participants who do not treat diarrhea? If so, ask why not.

❖ As we discussed earlier, there may be different types of diarrhea.

2.1 Do you treat these types of diarrhea differently?

- If yes, go through the following questions for the different types of diarrhea mentioned in section I.3
- If no, go through the questions for general diarrhea.

**Probe:** What is the first thing that they do? What is the next thing they do?

**Probe:** Do they give the child more fluids? Why or why not? What do they give them?

**Probe:** Do they give the child more food? Why or why not? What do they give them?

**Probe:** How about medicine; do they give the child any kind of medicine? Why or why not? What do they give them? Where do they get the medicine? Do mothers take the child to the doctor if they have diarrhea?

**Probe:** How do mothers treat their child if they only have a mild case of diarrhea? How about if the child is very ill or has repeated bouts of diarrhea—do they do anything differently?

- 2.2** When do mothers seek treatment outside the home if their child has diarrhea? Where do mothers seek treatment when their child has diarrhea—their relatives? Pharmacist/drug seller? Community health worker? Doctor? Nurse/paramedic?
- 2.3** What are examples of medicines for diarrhea? Are there medicines for different kinds of diarrhea or different severity of diarrhea? Do you still give ORS/increased fluids (ORT) if these medicines are being given?
- 2.4** What do health professionals/pharmacists that you visit usually give or prescribe for the different types of diarrhea?  
**Probe:** *If they mention anti-biotics or anti-diarreals, ask what type. If they don't mention anti-biotics or anti-diarreals, ask if these are prescribed, for what type of diarrhea? what types they are?*
- 2.5** How long do you give medicines for? How do you give them—in tablets, in syrup, mixed with food or fluids?
- 2.6** Is there anything you don't like about giving your child medicines?

*Note: after a general discussion, the following issues should be covered. They may arise naturally and so can be covered in any order.*

### **3. Perception on pricing for treating diarrhea (2 minutes)**

- 3.1** Is it costly to treat diarrhea? What are the costs to treat a child for diarrhea?

**Probe:** Do you think that price is affordable for you? What price would you think is affordable for you?

### **4. Oral Rehydration Salts/Therapy (ORS/ORT) (5 minutes)**

- 4.1** When a child has diarrhea, do mothers use oral rehydration therapy? How is that given?  
What about ORS—do mothers that you know give ORS for diarrhea? How do they give ORS to the child?

- 4.2 When do mothers in your community give ORS/ORT for diarrhea? Where do they get it? How long do they give it?
- 4.3 Do they find that the ORS/ORT helps the child? Why or why not?
- 4.4 Does the ORS/ORS stop the diarrhea?
- 4.5 Are there cases when children who have diarrhea don't need ORS/ORT? Explain.
- 4.6 Is there anything that mothers don't like about giving their child ORS/ORT?
- 4.7 When they are giving ORS, do they give other fluids as well? Do they give food as well? Do they give medicine as well? Why or why not?

## 5. Treatment practices after diarrhea (10 minutes)

- ❖ **Moderator to say:** OK we have talked a lot about what we do when our child has diarrhea. Now, I want to talk about what we do after the diarrhea stops.

- 5.1 How do we know when the child is getting better? What are the first signs that show that the child is getting better?
- 5.2 What do mothers do after the diarrhea stops?

**Probe:** Do they give more fluids than usual, less, or the same? What types of fluid do they give? What about ORS, do they keep giving it after the diarrhea stops?

**Probe:** Do they give more food than usual, less, or the same? Are there any special types of food that they give?

**Probe:** How about medicine; do they keep giving medicine after the diarrhea stops? What medicine do they give? When do they stop giving medicine?

## 6. Introduction of Zinc tablets (10 minutes)

- 6.1 What else is important for children when they have diarrhea?

**Probe:** Do children need nutrients such as vitamins and minerals when they have diarrhea? Do mothers in your community give these when their child has diarrhea?

- 6.2 Have you ever heard of Zinc? (If yes) Why is Zinc important?

- 6.3 Some of you said that mothers give their children medicine when they have diarrhea. How do they usually give their child medicine?

**Probe:** Do mothers ever give tablets to young children? Are there any problems in giving tablets to young children?

**Probe:** Do mothers ever give dissolving tablets to young children? Are there any problems in giving dissolvable tablets to young children?

- ❖ **Moderator to say:** Now we have something to show you (pass out Zinc tablets, one blister per person). This is a new product that we are introducing in Nepal. They are Zinc tablets. Zinc is a very important mineral for children when they have diarrhea.

**Probe:** If I told you this medicine (the Zinc tablets) would reduce the number of days a child had diarrhea and help to prevent diarrhea for 2-3 months, what do you think mothers in your community would you say? Is this important?

**6.4** Would they believe this is possible?

**6.5** Would they give such a medicine to their child? Why or why not?

**6.6** What concerns would they have about giving their child this medicine?

**Probe:** Zinc needs to be taken along with ORS/ORT. Zinc does not replace ORS or ORT. Would it be difficult to remember to do both? Why or why not? What would make it easier to remember?

**Probe:** If I told you that this tablet would boost the child's strength and resistance to disease, what reaction would mothers in the community have to this treatment? Is that important?

❖ **Moderator to say:** We'd like your honest opinion of the package (the blister pack). Feel free to take out the tablets and look at them.

**6.7** Is the package easy to open? Do the tablets smell good? Do you think the product looks like it is high quality?

**6.8** How would we give these tablets to a young child? How about to a baby?

Explain about how to disperse the tablets and demonstrate. Have each participant taste the solution.

**6.9** Now that you've seen how the tablets can be mixed with liquid, do you think this is a good way to give medicine to a young child? Why or why not?

**6.10** Would children take medicine like this?

**6.11** Would children like the taste?

**6.12** How much would mothers pay for these tablets if they knew they would help treat their child's diarrhea?

**6.13** Any other comments about the tablets?

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

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



# ANNEX C: QUESTIONS FOR PHARMACISTS AND DRUG SELLERS

## BACKGROUND INFORMATION

Location of pharmacy (address, district)

Hours of operation:

Name and position of respondent

## QUESTIONS

How many people come to the pharmacy daily?

What are the common products that you sell?

What common child health/treatment problems are brought to you as a pharmacist? Do you provide advice as well as medications?

When a client comes into the pharmacy with a child that has diarrhea, do they ask for a specific medication or do they ask for advice? What kinds of questions do they ask? What medications do you usually recommend and why? What advice/counseling do you usually provide?

How do they typically describe diarrhea? Do they differentiate between different types of diarrhea? Do you provide different treatments for each?

How often do mothers ask for ORS?

What are the common medicines or combinations of medicines sold for diarrhea? How much do they sell for?

How much medicine does a mother usually buy at a time?

Do mothers come back to the pharmacy if the diarrhea continues?

Is there another provider on the premises? What type? In what types of cases (diarrhea) do you refer a customer to that provider? What other child health services do you refer to the provider?

How do you learn about new medicines?

## **INTRODUCE ZINC BLISTER PACK:**

We have a new Zinc product, recommended by the World Health Organization, that treats diarrhea. This is a dispersible tablet, sold in a blister-pack of ten tablets. It is recommended that it be sold with ORS. A child with any type of diarrhea should take one tablet a day, along with ORS or ORT, for 10 days.

Are any of your current products promoted as having Zinc in them? What are these products? How are they promoted?

Are Zinc tablets or syrups sold? If so, what are they used for? What are they and for how long are they taken?

Do you ever sell dispersible tablets? Do they sell well? Do you provide instructions? Do people use them? Any complaints?

What about pricing? Do you think the Zinc diarrhea treatment should be priced to match other diarrhea products?

We are planning on conducting training sessions for pharmacists, assistant pharmacists, and counter assistants. Would you be interested in participating in this training? Who should attend? What is a convenient time or day? How far would you be willing to travel for training? Is there a convenient training location nearby?

We are planning on developing point-of-sale materials to assist in marketing this new Zinc treatment. What POS materials would be most convenient and/or useful? Where would you put POS materials? Where do you stock POS materials? Would you use a reference sheet or other handout? Would a diarrhea treatment wall chart be useful?

# ANNEX D: REFERENCES

Department of Health Services, Ministry of Health and Population (Nepal). 2004. *Annual Report 2003/2004*. Kathmandu, Nepal: Department of Health Services.

Ministry of Health (Nepal), New ERA, and ORC Macro. *Nepal Demographic and Health Survey, 2001*. 2002. Calverton, Maryland: Family Health Division, Ministry of Health; New ERA; and ORC Macro.

United Nations Children's Fund (UNICEF). 2004. *State of the World's Children*. New York: UNICEF.

World Health Organization (WHO) and United Nations Children's Fund (UNICEF). 2004. *Joint Statement on the Clinical Management of Acute Diarrhoea*. Geneva and New York: WHO and UNICEF.