PN-ABM-219

PRITECH

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SUPPLY, DISTRIBUTION, AND PROMOTION OF ORAL REHYDRATION SALTS (ORS): ANALYSIS OF THE BOLIVIAN MOH SYSTEM

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During The Period:
APRIL 28 - MAY 21, 1991

TECHNOLOGIES FOR PRIMARY HEALTH CARE (PRITECH) PROJECT
Supported By The:
U.S. Agency For International Development
CONTRACT NO: AID/DPE-5969-Z-00-7064-00
PROJECT NO: 936-5969

AUTHORIZATION:
AID/S&T/HEA: 08/27/92
ASSGN. NO: ICP 059-BO

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LIST OF TERMS AND ABBREVIATIONS

Departamento - Department; a state or province of Bolivia. There are a total of eleven departments in the country.

MPSSP - Ministerio de Prevision Social y Salud Publica; the official title of the Bolivian Ministry of Public Health.

Division de Atencion a las Personas - Name of the Ministry of Public Health's maternal-child health division.

CCH - Community and Child Health.

CED - Control de Enfermedades Diarreicas; the title of the section of the Ministry of Public Health's maternal-child health division that manages the Diarrheal Disease Control (CDD) program.

Unidad Sanitaria - Title for the regional level Ministry of Health offices. There are a total of twelve Unidades Sanitarias in Bolivia.

CEASS - Centro de Abasticimiento de Suministros en Salud; the title of the national level division of the Ministry of Public Health that manages the supply, storage, and distribution of all public health supplies, including ORS and other basic medicines and hospital supplies.

URES - Unidad Regional de Suministros; the title for the Unidad Sanitaria level counterparts of CEASS.

Distrito - District; the title for the Ministry of Health subdivisions under the Unidades Sanitarias. The number of Districts in each Unidad varies. The District director is almost always a physician.

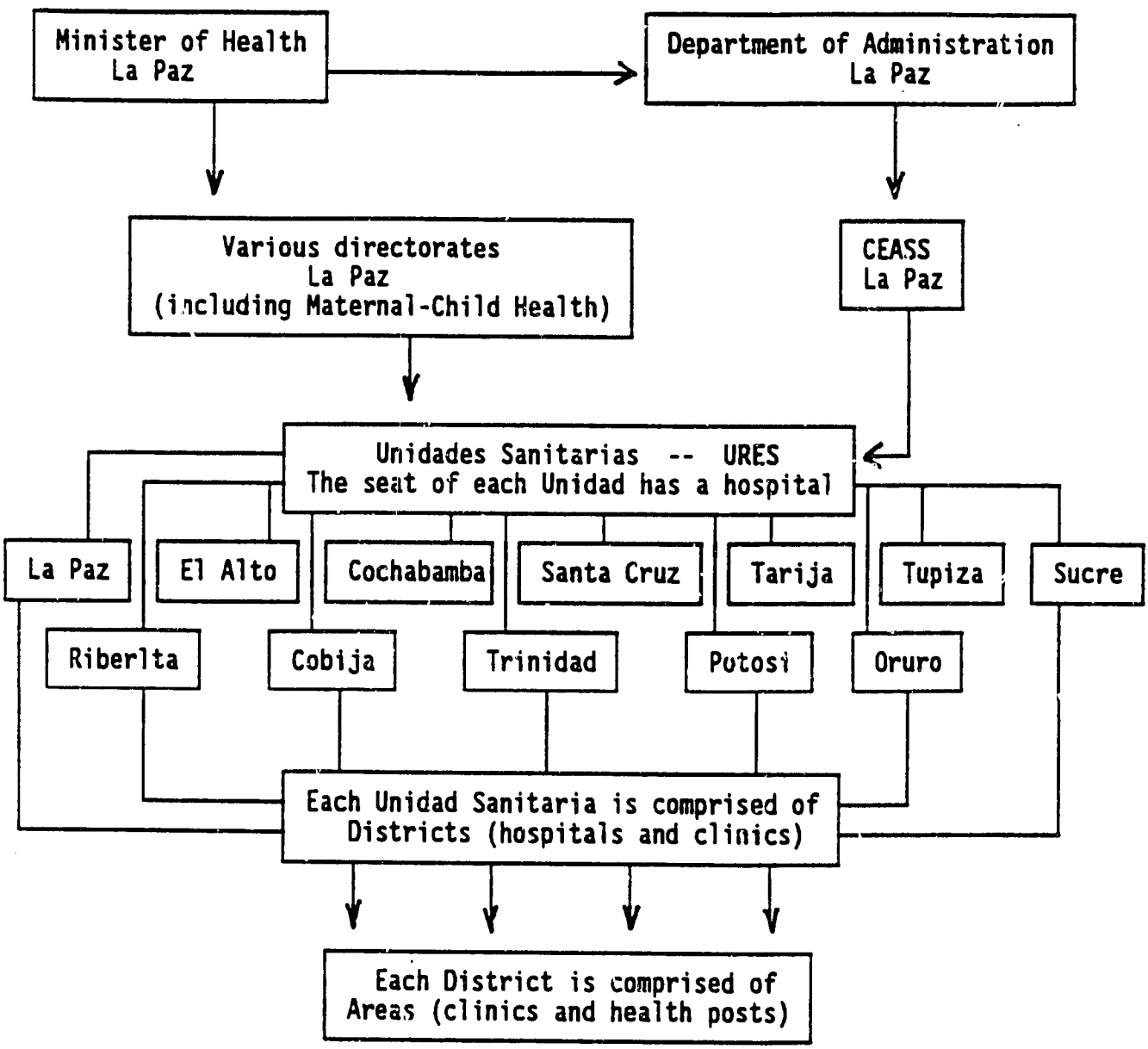
Area - District subdivisions; Areas may have a small hospital or posta sanitaria, which is a basic health center. Areas are sometimes headed by a physician but are most often staffed by a nurse.

UROS/C - Unidades de Rehidritacion Oral Comunitarias; usually small shops or private homes in a rural community or urban neighborhood where the shopkeeper or homeowner has been trained in the use of ORS and provides this information to the community as a volunteer. These locations are to be supplied with ORS packets and dispense them free of charge to users. The objective of the UROS/C is to make ORS and information about oral rehydration therapy widely available without the user having to visit a health post, clinic, or hospital.

RPS - Responsables Populares de Salud; individuals in the community who are identified or selected to be voluntary health promoters; sometimes may be the same as the person running the URO/C.

FLOW CHART OF THE BOLIVIAN MINISTRY OF HEALTH SERVICE SYSTEM

As it Applies to the Supply and Distribution of ORS



I. EXECUTIVE SUMMARY

This report indicates that the low levels of use of oral rehydration salts (ORS) in Bolivia are due to a combination of interacting variables: distribution constraints constitute one set of variables that interact with behavioral, cultural, and educational factors that limit the motivation to use ORS and the ability to use it correctly. The public sector distribution system, which is currently the only major supplier of ORS, must respond to the immediate needs for ORS and must therefore be improved as much as possible. In the longer-term, the public sector alone may be unable to sustain a consistent, broad coverage of the population needing ORS. The role that the Bolivian private sector might eventually play in assuring the availability of ORS should be factored into the analysis.

Currently, there appears to be no shortage of ORS in Bolivia. From April 1, 1990 through March 30, 1991, Ministry of Health (MOH) reports indicate that only 53%, or 1,153,625 packets, out of a total stock of 2,181,750 packets, was distributed from the CEASS national warehouse to the country's twelve Unidades Sanitarias. The stock of ORS in the CEASS warehouses totals approximately 900,000 packets as of mid-May 1991. Another two million packets of AID-donated ORS are expected to arrive in country by mid-August 1991. A newly established essential drugs program has also procured an estimated 800,000 packets of ORS. These packets are expected to arrive in country during June 1991 and July 1991.

At the same time, distribution from the national to the Unidad Sanitaria level does not necessarily reflect distribution and availability of ORS at the Unidad, District, and Area levels. More importantly, it is difficult to make any linkage between national to Unidad distribution patterns and distribution and availability of ORS at the community level.

Although ORS does not seem to be in short supply, distribution patterns beyond the national and Unidad Sanitaria level suggest periods of scarcity and limitations in the public sector distribution system. In the course of this study, several District and Area level centers were found to have minimal quantities of ORS, and two Districts reported having had no ORS supplies for the four to five months prior to this writer's visit. In the latter cases, the Unidad Sanitaria responsible for supplying these two Districts reportedly received 50,000 packets of ORS in mid-March.

Because of these periodic shortages, which seem to be attributed to the limits of physical distribution, an understandable mentality of scarcity prevails among personnel at some of the Unidad, District, and Area levels. Some of the individuals interviewed at these levels express insecurity and uncertainty about when they will receive their next delivery of ORS and the size of the order, and there is a tendency to hoard ORS and other supplies in the Unidad and District warehouses and storage rooms. Thus, on top of the physical limits to the public sector distribution system, such attitudes seem to be an additional constraint to widespread distribution to end-users.

The current cholera scare may contribute to an even more pronounced tendency to hoard ORS, for fear that there will not be sufficient stock on hand to supply a particular District or Area that might be especially hard hit by the

epidemic. Again, this approach works against widespread community-level distribution of the product and in many ways may defeat the very purpose behind the tendency to hoard the product.

The current distribution system principally serves MOH service locations such as hospitals, clinics, and health posts. More widespread distribution through community health promoters, homes, and small shops in the community seems to vary throughout the country, and is constrained by the limits of the public sector system's distribution to the lower service levels. These factors suggest that it will be difficult to assure adequate and constant supplies of ORS to the newly established UROS/C under the current system.

Just as the national distribution figures do not necessarily reflect distribution and availability at levels closer to the end-user, they do not necessarily indicate levels of use of ORS. Although the MOH's reported national ORS use data for 1990 are unavailable, representatives of the MOH believe that use of ORS is well below the level of availability and distribution. Results of the 1989 Demographic and Health Survey (DHS) also suggest that use of ORS is low compared with its theoretical availability: while 70% of women stated that they know about ORS, only 30% report that they use it.[1]

Use of ORS may be understated or incorrect even among women who claim to use the product. An in-depth analysis of maternal and child mortality data from the 1989 DHS data indicates that 40% of the mothers of children who died from diarrheal disease stated that they treated the child with ORS before he/she died.[2]

The degree to which the seemingly low levels of use of ORS in Bolivia are attributable only to poor distribution at the community level is not clear. The DHS results indicate that 41% of rural women stated that lack of nearby services was the principal reason for not using ORS, suggesting that access and availability are key factors influencing use for these women. At the same time, the degree to which the low levels of ORS use, or its incorrect use, are due to variables unrelated to distribution, such as a lack of or inappropriate educational and motivational training and promotion, is also unknown.

The following actions are recommended to address the immediate and longer-term issues surrounding the above-described combination of distribution and motivational constraints:

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[1] Encuesta Nacional de Demografia y Salud, 1989. Instituto Nacional de Estadistica, Bolivia, with the Institute for Resource Development/Macro Systems, Columbia, MD.

[2] Maternal Child Health in Bolivia: Report on the In-Depth DHS Survey in Bolivia, 1989, by A. Elisabeth Sommerfelt, J. Ties Boerma, Luis H. Ochoa, and Shea O. Rutstein. Institute for Resource Development/Macro Systems, Inc., Columbia, MD. April 1991 (unpublished report).

A portion of the funds currently budgeted for ORS procurement under the USAID/La Paz CCH program should be reprogrammed. These funds should be utilized for the following activities:

A. An assessment of various mechanisms that might be utilized to improve distribution of ORS in Bolivia. The long-run objective of such an assessment is to establish a sustained mechanism that assures timely and efficient physical distribution of ORS (and, perhaps, other essential drugs) potentially utilizing private sector systems such as soft drink bottlers or consumer product firms. During the initial implementation of this recommendation, it is expected that USAID or the other international donor agencies will be required to subsidize the cost of ORS distribution.

B. Immediate technical assistance to CEASS and training at the URES and District levels to improve systems for the management of public sector ORS inventories. Such assistance is required to assure responsiveness to the cholera epidemic and to optimize the effectiveness of the public sector system in the short-run.

C. Motivational training for Unidad Sanitaria and District and Area level MOH personnel responsible for distributing ORS in the public sector.

D. Research in selected communities to assess the degree to which behavioral, cultural, and educational factors influence ORS use (both the motivation to use it and the ability to use it correctly), and how these factors interact with and influence factors related to access to and availability of the product at the community level.

A detailed description of the above recommendations and a proposed implementation plan are included in Section VII of this report.

In general, it is important that in implementing these recommendations the international donor agencies involved in Bolivia's diarrheal disease and essential drug programs make additional efforts to coordinate their activities. The agencies most involved are UNICEF, Pan American Health Organization (PAHO), and USAID. The World Bank and the government of The Netherlands are involved in funding major drug purchases and systems development for an essential drug program.

Potential duplications of effort have been identified, such as the purchase of ORS under the essential drug program while AID is simultaneously donating over two million packets during 1991. The agencies involved should work together with CEASS, the Maternal-Child Health Division, and the Department of Administration of the MOH to develop and implement a coordinated, integrated drug management, supply, and distribution system. USAID/La Paz's specific interest in and close involvement with ORS should serve as an entry point and/or subsystem of a larger, more integrated system.

II. INTRODUCTION

The purpose of this report is to provide the USAID/La Paz Mission, representatives of the Bolivian MOH, and representatives of other international donor agencies with an analysis of the current public sector

system for supplying, distributing, and promoting ORS in Bolivia. The report recommends specific actions that USAID/La Paz, in coordination with other international donors, might support in order to improve the distribution, availability, and use of ORS in Bolivia. The content of this report may provide guidance for amending the CCH contract to allow some of the funds currently earmarked for the purchase of ORS to be used for implementation of other program activities related to ORS distribution and promotion.

The issues addressed in this report principally concern the Bolivian MOH's system for supplying and distributing ORS. USAID/La Paz requested PATH/PRITECH's assistance in helping to understand the public sector supply and distribution system. The Mission donated over two million packets of ORS to the Government of Bolivia in 1990, and expects to deliver another donation of two million packets by August 1991. The Mission, the MOH, and the other international donors are particularly concerned about assuring the availability of ORS at the community level because of the current cholera epidemic in South America. Although Bolivia still has no reported cases of cholera, fear of the disease is strong and MOH officials believe that it is only a question of time before the disease strikes.

The MOH's objective is to assure that there will be sufficient supplies of ORS immediately available to treat the diarrhea-induced dehydration associated with cholera. The treatment for cholera in areas of the country with little or no access to health service dictates that a patient suffering from suspected cholera be treated immediately and continuously with ORS and other fluids at the first sign of diarrhea. The patient may or may not require treatment with antibiotics; oral rehydration therapy (ORT) alone can prevent the shock and rapid death that often occurs within twelve hours of the onset of cholera-induced diarrhea.

At the same time, the MOH and the international agencies recognize that in Bolivia many more people, particularly children under the age of five, now die from dehydration associated with routine diarrheal disease than will die from cholera. In an effort to take advantage of the fact that the cholera epidemic has renewed awareness of the dangers of diarrheal disease and dehydration, the MOH has launched a renewed campaign to prevent and treat diarrheal disease and dehydration. The campaign is supported by UNICEF, PAHO, and USAID/La Paz.

The campaign includes mass media promotion and community-based education to make the public aware of the dangers of diarrheal disease and the dehydration associated with it. A cornerstone of the effort is the establishment of UROS/C that are expected to supply ORS at the community level through private homes and small shops. There is concern about assuring that the community-level health posts, as well as the UROS/C, have a continuous and adequate supply of ORS so that citizens responding to the content of the promotional and educational messages can obtain ORS readily when they need it.

III. PREPARATION OF THE REPORT

This report was prepared at the request of USAID/La Paz, Office of Health and Human Resources. It is intended for use by USAID/La Paz and the CCH program (funded by USAID/La Paz); the Bolivian Ministerio de Previsión Social y Salud Publica (MOH), Dirección Nacional de Atención a las Personas (Maternal-Child

Health Division); the MOH's CEASS; the MOH's Office of Administration; PAHO/Bolivia; and UNICEF/Bolivia. The research, analysis, and preparation of this report were carried out by Sara Tifft, Program Officer, Program for Appropriate Technology in Health, Seattle, Washington, USA. This project operates under the auspices of the Technologies for Primary Health Care (PRITECH) program, Washington, D.C., USA.

The scope of this report includes description and analysis of the current supply and distribution system for ORS, assessment of current stock levels in the country and the rate of distribution of ORS, assessment of the need and demand for ORS in Bolivia and the public sector systems currently in place to measure demand, documentation of the approximate cost of public sector ORS distribution, and a description of current diarrheal disease promotional and educational programs and recommendations for additional interventions. This report was reviewed and assessed in the context of UNICEF, PAHO, and other international donor efforts to support the MOH's Diarrheal Disease Control (CDD) program and related programs, such as the essential drugs program.

The analysis of the supply and distribution system was carried out through interviews with appropriate personnel at the national level; interviews and observation at Unidad Sanitaria, District, and Area levels in the Departments of Cochabamba and Santa Cruz; and interviews with representatives of the Unidad Sanitaria, Department of La Paz. Information concerning the efforts being supported by UNICEF, PAHO, and the World Bank was obtained through interviews with representatives and consultants of these agencies.

The report is limited in several ways. First, the author was unable to undertake a statistically valid analysis due to time limitations. Exemplary field data were thus collected from sites in Cochabamba, Santa Cruz, and La Paz. National level data were collected from the MOH's Division of Maternal-Child Health and CEASS. Due to these limitations, it may not be valid to make generalizations about the entire system as it functions in each Unidad Sanitaria based on the analysis of the national level system and three Unidades Sanitarias. At the same time, this analysis is important because the national system interacts with all Unidades Sanitarias, and because Cochabamba, Santa Cruz, and La Paz are the most populous regions of the country. A list of locations visited is included in Appendix 1.

A second limit of this report is the difficulty of commenting on the substance of the educational component of the MOH's promotion campaign, due to the inability to observe educational sessions.

Information was obtained from the following sources: personal interviews (Appendix 1); analysis of reports from the MOH and other sources (Appendix 2); and personal observation of warehousing, transport, and inventory conditions and records.

The author would like to acknowledge the special assistance of the following individuals: Mr. Javier Palazuelos, Logistics Consultant for the CCH project, who provided valuable background information and made key introductions; and Dr. Marta Mejía Soto, National Director of the MOH CDD program, who spent many hours with the author answering questions, assessing reports, and evaluating the recommendations.

IV. THE ORS DISTRIBUTION SYSTEM: HOW IT IS INTENDED TO WORK

A. National Level to Unidad Sanitaria level

1. Establishment of Programming Goals and ORS Requirements

According to MOH guidelines, each Area within each District within each Unidad Sanitaria is supposed to establish annual goals for treatment of children under five with diarrhea. The number of cases expected to be treated is based on the population of the Area, District, and Unidad Sanitaria. This figure is multiplied by the coverage rate that each Area believes is feasible based on available personnel, infrastructure, and previous experience. Coverage rates may vary greatly from one Area to another.

The Area's population of under five years of age multiplied by the coverage rate equals the number of children with diarrhea that are expected to be reached in the Area for the coming year. This figure is multiplied by the national CDD program norm of each child having an average of three episodes of diarrhea per year, and each episode being expected to require an average of three packets of ORS.

As an example of the way the program requirements are established, assume an Area has a population of 10,000 children under the age of five. If the Area's directors believe that a coverage rate of 50% is achievable, then the goal for the number of episodes of diarrhea to be treated and the number of packets of ORS required for the year will be:

> 10,000 x 50% x 3 episodes/child x 3 packets/episode = 45,000 packets needed in the Area during the year to treat the expected 15,000 episodes of diarrhea.

The Area goals are aggregated at the District level, which are, in turn, aggregated at the Unidad Sanitaria level. The goals and ORS requirements for the twelve Unidades Sanitarias are then totalled at the national level under the direction of the national director for the CDD.

2. National Level Receipt, Storage, and Distribution, and Associated Costs

CEASS, a division of the MOH that was established in January 1991, is responsible for documenting receipt of ORS and other donated and purchased health commodities.[3] CEASS is also responsible for national level warehousing of these commodities. There are two CEASS warehouses in La Paz. The principal warehouse is in the Miraflores area where the Director of CEASS also has his office. A second, more informal storage area, is within the offices of the MOH complex on the

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[3] Vaccines are the exception; they are handled separately by the Department of Epidemiology.

Calle Capitan Revelo. The two storage areas are separated by a ten-to-fifteen-minute automobile ride.

The amount and timing of each shipment of ORS to the Unidades Sanitarias is to be based on the program goals and requirements described above. CEASS is expected to ship 25% of the total annual requirement to each Unidad Sanitaria on a quarterly basis. CEASS is expected to cross-check all shipments with the director of the CDD program to assure conformance with the previously established program goals for each Unidad Sanitaria.

Shipments are made to the Unidades Sanitarias in different ways. For supplies destined for the Unidad Sanitaria/La Paz, goods are transported by truck or car from the CEASS warehouse to the Unidad Sanitaria/La Paz warehouse in the Avenida Montes area of the city. For all of the other Unidades Sanitarias except Riberalta, Trinidad, and Cobija, goods are shipped overland by private trucking companies contracted by CEASS. Delivery to Riberalta, Trinidad, and Cobija is by air using Transporte Aereos Militar (TAM), which is the Bolivian air force.

The Unidades Sanitarias have warehouses or storage facilities whose sizes, locations, and conditions vary from one Unidad to another. The Unidades generally use a simple Kardex system to record shipments received and shipments disbursed to Districts. This requires a warehouse manager to write by hand the amounts of goods received into the warehouse by date, and to note by hand the amount disbursed, to whom it was disbursed, and the date of disbursement.

The current out-of-pocket cost of storing and shipping ORS from the national to the Unidad Sanitaria level is as follows: warehousing has no out-of-pocket cost, as the national warehouse and storage areas are government properties. Trucking costs are US$.05/kilo and air freight costs are US$1.10/kilo. Each USAID-donated carton of 625 packets of ORS weighs 23 kilos.

For example, the cost of shipping 50,000 packets of ORS by truck to any of the Unidades Sanitarias accessible by road would be:

50,000/625 = 80 cartons x 23 kilos/carton x $.05/kilo = US$92.00.

The cost of shipping an equivalent amount by air to Riberalta, Trinidad, or Cobija would be:

80 cartons x 23 kilos/carton x $1.10/kilo = US$2,024.00.

B. Unidad Sanitaria Level to District Level

Under the recently established CEASS system, each Unidad Sanitaria is to establish a regional supply unit, called URES. This effort is a part of the current decentralization policy of the MOH.

The URES in each Unidad Sanitaria are intended to monitor programming and use of all medicines and medical supplies, including ORS, for all of the Districts within the Unidad's jurisdiction. The URES will supervise warehouse personnel, interact with the District directors concerning the provision and use of all supplies, and will interact with CEASS to assure shipment of supplies from the national to the Unidad level. The URES will also coordinate with program managers at the Unidad level in order to bring all program-related supplies under one system.

The physical distribution of ORS and other supplies to the Districts generally occurs when the District directors or other District personnel travel to the city housing the Unidad Sanitaria office to collect their salaries. This may be monthly, bi-monthly, or quarterly, depending on the District and the Unidad.

Transportation of supplies from the Unidad to the Districts is variable. Most of the nearly 100 Districts in the country have their own ambulance or other transportation, and District personnel are expected to transport supplies in these vehicles. In cases where MOH vehicles are unavailable, District personnel must carry goods with them by bus, taxi, or some other form of public transportation. Small amounts of funding are available for District personnel transportation, but not for the transport of goods. The availability of fuel and repair for the District vehicles is also limited and subject to uncertainty.

District level warehousing conditions seem to be variable. Some Districts have a hospital while others only have a small clinic or health post. ORS and other supplies are generally stored within the District hospital or health post wherever space is available. This includes hallways, patient waiting areas, and examining rooms. Kardex systems are expected to be in place at the District level, although the author only observed one such Kardex system first-hand at one District health center outside of Santa Cruz.

C. District Level to Area Level

The Area physician or nurse is expected to carry supplies back to the Area when they go to the District office to collect their salaries. As is the case with the District to Unidad level, this may occur monthly, bimonthly, or quarterly, depending on the distance of the Area health post from the District head office and the availability of transportation. Funds are theoretically available to pay the transportation costs of personnel but not goods.

The Area level facilities are generally small health posts that have no significant storage areas. Supply levels are expected to be sufficient for only one to two months for the Area's population. Area level personnel keep supplies in storage cabinets and drawers, or wherever space is available.

The Area level physician or auxiliary nurse is expected to supervise, monitor, and supply the health post, and to distribute ORS to the community. Unlike many other medical supplies, ORS is not intended

exclusively for use within a medical service facility under the supervision of a physician or nurse. Area personnel are thus expected to supply ORS to health promoters in the community and other RPS; mothers clubs; local nongovernment organizations (NGOs) and private voluntary organizations (PVOs) working in health; and in some cases house-by-house directly to consumers, leaving two or three packets of ORS at each home. Under the recently re-established UROS/C system, the Area level facility and personnel are expected to supply the UROS/C.

D. Reporting, Supervision, and Evaluation

The RPS, health promoters, and UROS/C are expected to complete monthly reports indicating the number of cases of diarrhea treated; assessed degree of severity of the diarrhea; name, address, and age of each child treated; and number of packets of ORS given for each case. The Area health post personnel are expected to keep track of the number of packets of ORS distributed to each RPS, health promoter, URO/C, and private home, although the author observed no formal Kardex or other systems to track such distribution. Treatment of diarrhea within the health post is also supposed to be recorded by the Area health post personnel.

These reports are to be sent to the District level and aggregated, and then sent to the Unidad Sanitaria level and aggregated for all Districts. The Unidad Sanitaria reports are then expected to be sent to the national level where they are to be evaluated on a country-wide basis. These reports are to be used to determine if programmed amounts of ORS for each Unidad Sanitaria are too high or too low. A similar reporting system is theoretically in place for other program supplies, such as antibiotics for treating acute respiratory infections. The previous year's reports are to be used by the national CDD program to assess ORS and other supply requirements for the coming year.

V. THE ORS DISTRIBUTION SYSTEM: HOW IT ACTUALLY WORKS

NOTE: The current panic about the cholera epidemic seems to be contributing to the lack of consistency in the MOH's ORS distribution system. Some current conditions may not represent procedures under nonepidemic conditions.

A. Shortage of Information for ORS Program Planning, Distribution Control, and Use

At all levels of the MOH system there is a shortage of information concerning community-level distribution of ORS and use of the product. As a result, the national CDD program director has limited ability to evaluate requirements and make them fit more precisely with actual use. As described above, Area, District, and Unidad goals and requirements are established each year, but with little apparent guidance concerning how to calculate coverage rates or global information about previous experience.

The monthly community-level distribution and use reports from the Areas and Districts are delivered erratically or not at all. Personnel at the Unidad Sanitaria and national levels indicated that even when received,

the information included in these reports is assumed to be inaccurate. The reports are generally assumed to underreport the number of cases of diarrhea treated, the number of ORS packets given to users, and the number of children dying from dehydration.

The poor reporting appears to be attributable to several causes. First, the NGOs and PVOs that receive ORS supplies from the Unidades, Districts, or Areas often do not report distribution and use to their supplying source. Second, there is a shortage of personnel at the Unidad and District levels to supervise and control reporting. The director of the CDD program believes that while the community-level health promoters and RPS attempt to report as best they can, their superiors at the District and Unidad levels do not have the capacity to value and utilize the information generated. Personnel are responsible for many activities, including direct service, and reporting is often the last task attended.

Finally, the reporting forms differ from one District or Area to another. The auxiliary nurse working in the District based in Montero designed her own form for the health promoters to use. Her form uses drawings and a few columns, but still requires a lot of information. In contrast, the report forms used by the Unidad Sanitaria/Cochabamba are more traditional forms with columns and rows.

A national system for obtaining and assessing health data is currently being established. This system, known as Sistema Nacional de Información en Salud (SNIS) intends to track the prevalence of different diseases and conditions. The forms currently being developed for the SNIS do not include notation of the numbers of ORS packets distributed or used.

To the extent that reports are completed, they reach the national CDD office from the Unidades Sanitarias very late. For example, the national CDD office received a complete 1990 report on diarrheal disease cases and ORS use only from one region, the Unidad Sanitaria/La Paz, and this was received in April 1991. One or two other Unidades Sanitarias submitted 1990 reports, but did not total them. Instead, the individual Area and District reports were sent, which required the national CDD office to add them together—a task which is unlikely to occur due to a shortage of personnel.

The only other community-level and use data available are from a 1989 report which indicates the following:

- On a national level, a reported total of 100,123 cases of diarrhea were treated in nine out of eleven Unidades Sanitarias, with 268,387 packets of ORS reportedly distributed.[4]

- No reports were received from the Unidades Sanitarias/Riberalta and Cobija.

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[4] In 1989 there were only eleven Unidades Sanitarias. The Unidad Sanitaria/El Alto was established in 1990.

- The reporting periods vary: for six of the nine Unidades Sanitarias reporting, the period is January-December; for one it is January to July; for one it is January to June; and for one it is September 1988 to September 1989.

Representatives of CEASS found that the 1989 Kardex showed that 170,000 packets of ORS had been sent to the eleven Unidades Sanitarias, less than the reported 268,387 reported distributed (the 1989 Kardex data were recorded under the agency that existed prior to CEASS). The end-of-year remaining inventory as of December 31, 1989 totaled 323,000 packets.

Assessment of the 1989 information with the director of the CDD program and CEASS suggests that a large number of packets of ORS were distributed to NGOs and PVOs, particularly to Caritas Bolivia. These distributions were not recorded and distribution and use reports were not obtained. These packets may have been distributed to the NGOs and PVOs without going through the central procurement system.

B. Hypothetical Need for ORS is Greater than Reported Distribution and Use

The number of children, ages 0-4, in Bolivia totals 875,000.[5] If this total is multiplied by the national CDD program's average of three episodes per child per year, there would be a total of 2,625,000 expected cases of diarrhea per year in Bolivia in this age group.

Assuming that 30% of total cases receive treatment with ORS, one would expect to treat 785,500 cases annually using a total of 2,362,500 packets of ORS (assuming an average of three packets per episode). The 1989 reported use of 268,387 packets equals 11% of what would be expected if there were 30% coverage of the total expected cases.

Similarly, the number of ORS packets reported to have been distributed by CEASS and its predecessor agency during the 1990 calendar year totals 790,225. This represents a coverage rate of approximately 10% of all cases.

This information only represents distribution of ORS from the national to the Unidad Sanitarias and to some NGOs and PVOs. The author was unable to obtain data concerning current stock levels at each Unidad Sanitaria, making it impossible to determine the rate at which this national-to Unidad-level inventory is being consumed.

C. Inadequacies in the Distribution System that Promote Inconsistencies and Shortages

Several Districts and Areas were found to be receiving supplies directly from CEASS. Several individuals interviewed at the Area and District levels indicated that they intended to jump the official chain of command and order their supplies from the Unidad or national level. This contributes to an already inconsistent control system, whereby it also

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[5] Encuesta de Poblacion y Vivienda, 1989.

appears that at the national and Unidad Sanitaria levels numerous people are often authorized to release shipments.

The sizes of shipments to the Unidades Sanitarias is somewhat variable. During the twelve-month period April 1, 1990 through March 31, 1991, shipments to the Unidades Sanitarias ranged in size from a minimum of 5,000 packets to a maximum of 50,000 packets.

There were also numerous small shipments and deliveries reported to NGOs, PVOs, hospitals, and communities. It appears that many of these entities should be covered by their respective Unidad Sanitaria or District rather than directly by CEASS. The recent prospect of a cholera epidemic reaching Bolivia seems to have contributed to an increased tendency to respond to any and all requests from all levels.

There is minimal or no conformance with the intended quarterly delivery system. This appears to be attributable to a simple shortage of funds within CEASS to pay the cost of overland transportation or air freight. For example, during the last quarter of 1990, only 4.7% of ORS inventory was shipped to the Unidades Sanitarias. In contrast, almost 34% was shipped during the first quarter of 1991. CEASS representatives state that there were limited funds for shipping during the last quarter of 1990, while during the first quarter of 1991 UNICEF agreed to pay the invoices submitted by the trucking firms and TAM. A detailed analysis of the most recent CEASS distribution reports is included in Appendix 3.

Finally, the system is severely constrained by a shortage of trained personnel, particularly at the Unidad Sanitaria level and down. For example, the chief nurse for the Maternal-Child Health Division of the Unidad Sanitaria/Santa Cruz was observed to be a highly dedicated individual who shoulders an enormous amount of responsibility. She personally takes charge of distributing program supplies, including ORS, to the Districts and several of the Areas. She is not specifically trained to manage inventory and supplies. Understandably, she is unable to keep up with all of these demands.

Similarly, the Area physician in one small hospital outside of Cochabamba is required to treat all patients, stock and maintain supplies, and complete all reports. Similar dedicated personnel were observed in other locations, each of them carrying a wide range of diverse responsibilities.

D. Increased Responsibility at the Unidad Sanitaria Level

As mentioned earlier, the MOH is moving toward establishing a more decentralized system. Decentralization is an overall positive step, as the regions in Bolivia are very diverse and have special needs. At the same time, decentralization may involve a potentially difficult transition from dependence on the national level for all guidance and resources to regional planning and creativity.

The author observed evidence of the advantages and disadvantages of increasing Unidad responsibility and authority. For example, the Unidad Sanitaria/Cochabamba has decided to withhold ORS supplies to the Districts

to 25% of programmed amounts, out of concern about cholera hitting one particular District more severely than another. The Unidad does not want to be in the position of having distributed all supplies to the Districts and then having to try to retrieve them in order to dedicate them to one particular District. This approach reflects a lack of understanding of the concept of safety stock at the Unidad warehouse, and it also demonstrates a lack of confidence that CEASS will be able to send emergency supplies in the event that cholera hits one District especially hard.

In contrast, several levels of personnel at the Unidad Sanitaria/Santa Cruz were observed to be distributing ORS to all Districts and many Areas, and even to other Unidades Sanitarias, to the point that the Unidad stock level was down to 5,000 packets. While the intent is a good one, this approach also ignores the concept of safety stock at the Unidad level. The current low inventory level also ignores the lag time that will occur between a request to CEASS for additional supplies and their arrival at the Unidad.

Another example of the effects of decentralization is the approach being taken by the national CDD program to implement the new CDD program. The Unidades Sanitarias are provided with certain minimum resources and materials, and then each one is expected to develop its own program. The Unidades Sanitarias are expected to make contact with local radio and television stations to obtain free broadcast of the radio and television spots developed for the education and promotion campaign, for example.

The Unidades are also being asked to develop relationships with the local soft drink bottlers in their regions to obtain their assistance in distributing ORS to District- and Area-level hospitals and health posts who will, in turn, distribute to the UROS/C. The Bolivian Minister of Health solicited the assistance of the national association of soft drink bottlers to obtain their collaboration in distributing ORS in response to the cholera crisis.

The MOH learned that the bottlers operate in very distinct ways throughout the country, indicating that such an effort will work if it is customized on a region-by-region basis. In addition, the bottlers are unable to disclose their routes and delivery points, as such information is proprietary; thus, the Unidades Sanitarias can rely on the bottlers to deliver only to MOH clinics and posts. It appears that there will be a sporadic, and probably only short-term use of the bottlers for distribution while concern about the cholera epidemic lasts. There is no provision for providing financial incentives to the bottlers to continue to distribute ORS in remote areas of the country.

Overall, the trend toward regional responsibility will probably lead to more positive results for many of the Unidades Sanitarias. However, without strong norms, supervision, and follow-up from the national level, efforts may fall short in some regions where personnel are lacking or unmotivated. It is particularly possible that expected "trickle down" from the national to Unidad to District to Area levels for the UROS/C establishment and training may lack consistency and follow-up.

VI. ROLES OF THE INTERNATIONAL DONOR AGENCIES

A. Pan American Health Organization (PAHO)

PAHO currently supports the MOH's new CCD program in several ways. PAHO is supporting the cost of identifying and selecting the new UROS/C and all associated training and training materials. This includes travel to Unidades Sanitarias by MOH personnel, and associated travel to District and Area levels by Unidad personnel. The UROS/C will be identified and selected in collaboration with local campesino federations and rural unions. The UROS/C is also to be established by rural school teachers in communities that have no health services.

PAHO is also organizing technical assistance and providing a share of the funds for training, especially during the initial period of establishing the UROS/C. PAHO will also contribute to program evaluation. CEASS reported that PAHO has agreed to pay transportation costs of shipping ORS from CEASS to the Unidades Sanitarias for the second four-month period of 1991, although this could not be confirmed.

B. UNICEF/Bolivia

UNICEF supported the development and production of the three radio spots and two television spots for the CDD program. The agency does not pay for the purchase of air time to broadcast the spots. UNICEF also paid the cost of transportation of ORS from CEASS to the Unidades Sanitarias for the first four-month period of 1991.

UNICEF is also financing the production of some of the printed materials that go with the campaign, including two posters. One poster carries a prevention message and the other a treatment message. UNICEF funds also support the printing of flyers that are to be distributed in communities when MOH vehicles drive through with loudspeakers playing radio messages about cholera and diarrheal disease prevention and treatment.

The Director of UNICEF/Bolivia made a commitment to collaborate with USAID/La Paz to provide funds to support the establishment of an integrated, comprehensive drug supply management and distribution system that covers free program supplies (such as ORS) as well as the essential drugs which are expected to be sold. UNICEF would like to collaborate in this effort in the interest of creating a global system that minimizes duplications of effort and redundancy.

C. USAID/La Paz

Through the CCH program, USAID/La Paz supports the diarrheal disease control effort through the purchase of ORS. The Mission has expressed a strong desire to program some of the funds currently designated for ORS procurement to other program activities. This will require development of specific proposals and a process of amending the current CCH agreement.

D. The Essential Drugs Program

With support from the World Bank, the Dutch government, and PAHO, the MOH is in the process of establishing a self-financing essential drugs program. The first shipment of drugs is expected to arrive in the country during the next several months. The items were purchased with a grant from the Dutch government and include 102 basic drugs. The objective of the program is to distribute these basic drugs through the MOH system and charge a fee to users for them. The fees will be set on a national basis and will be very low so that they are affordable. The price of the drugs might be included in the price of health care services, as the MOH already has a policy of charging a minimum amount for visits to health posts and government hospitals.

The World Bank is working with the Department of Administration of the MOH to develop systems for tracking financial information, supply and inventory information, and services data. CEASS is incorporated into this system, as CEASS will manage the inventory and distribution of the essential drugs as well as drugs and other supplies that are provided free of charge. The World Bank is also constructing warehouses and supplying computer systems in the areas where it is designated to work, which are the urban areas of La Paz, El Alto, Cochabamba, and Santa Cruz.

PAHO is providing technical assistance to the essential drugs program in the areas of drug selection, inventory management, and distribution. PAHO will begin a series of training workshops for URES personnel at the Unidad Sanitaria level starting in July of this year. The training will be carried out in conjunction with CEASS. PAHO reports that the program for these training workshops will be available by June 1, 1991.

According to PAHO and UNICEF representatives, some duplications have taken place between the donated (program) drug efforts and the essential drug program. As noted earlier, approximately 800,000 packets of ORS have been purchased under the essential drug program. While these are technically supposed to be sold (as are all products within the essential drug program), it is widely recognized that currently there is not sufficient demand for ORS in Bolivia to expect patients visiting health posts to pay for the product when abundant supplies of free USAID-donated ORS are available. PAHO representatives state that the essential drugs program ORS will definitely not be sold.

UNICEF representatives indicated that there are probably a number of similar duplications between the donated UNICEF drugs (such as ferrous sulfate and certain antibiotics) and the essential drug list purchases. Again, the MOH may be faced with the problem of having to sell some products while identical products are available free of charge.

VII. RECOMMENDATIONS AND IMPLEMENTATION PLAN

This report proposes that the low levels of use of ORS in Bolivia are due to a combination of interacting variables: distribution constraints interact with behavioral, cultural, and educational factors that limit the motivation to use ORS and the ability to use it correctly. This report also proposes that the

public sector system must respond to the immediate need for ORS and must therefore be improved to the highest level of excellence possible. However, in the longer-term, the public sector alone will be unable to sustain a consistent, broad coverage of the population needing ORS. The role that the Bolivian private sector might eventually play in assuring the availability of ORS must be factored into the analysis.

The following actions are recommended to address this combination of distributional and motivational constraints:

A share of the funds currently budgeted for ORS procurement under the USAID/La Paz CCH program should be reprogrammed. These funds should be utilized for the following activities:

A. Complete an assessment of various mechanisms that might be utilized to improve distribution of ORS in Bolivia

One of the most straightforward constraints to ORS distribution in Bolivia is the erratic availability of funds for transportation within the MOH. Alternative ways to address transportation need to be assessed. The objective of such an assessment is to establish a mechanism that assures timely, efficient, and sustained distribution of ORS (and, perhaps, other essential drugs), potentially utilizing private sector systems such as soft drink bottlers or consumer products companies.

The initial implementation of this recommendation may require that USAID or the other international donor agencies subsidize the cost of ORS distribution. However, the long-term objective is to develop a self-financing distribution system.

Self-financing options to be examined will include the costs and benefits of eventually switching some or all supplies from donated ORS to locally-manufactured product as the donated supplies are consumed; and utilizing a share of the proceeds from sales under the new essential drugs program to pay the private sector distribution costs of all essential drugs, including ORS.

More immediately, and in response to the cholera crisis, alternative ways to assure distribution of the Ministry of Health's donated ORS should be evaluated, including:

- A single contract with a local, private freight forwarding firm.
- CEASS procuring and using its own trucks and drivers.

- Developing a contracting system that utilizes the trucks of the soft drink bottlers in various regions to deliver ORS.[6]

- Contracting one or more private pharmaceutical, medical product, or consumer product distributors to distribute ORS to remote communities.

The implementation of one or several of these alternatives, with funding from USAID through the CCH project, will lay the foundation for a system that is self-financing.

Implementation plan

There are two principal levels of distribution to be assessed: (1) central (CEASS) to provincial, which is essentially wholesale distribution; and (2) provincial to district and area levels. The Districts and Areas are generally those levels closest to the end-user, or retail, level. Under the current plan, the receiving point for goods shipped from the central level will be the Unidad Sanitaria warehouse in each province (department).

The first activity will be an in-depth assessment of various options to assure short- and long-term ORS distribution. Professionals with private sector distribution and marketing experience should undertake extensive interviews and financial analysis to determine the costs and benefits of the options described above.

Interviews would include contact with private firms in Bolivia producing and/or importing ORS and other oral rehydration products; distributors of pharmaceutical, medical, and consumer products; and soft drink bottlers. The extent of distribution coverage by each of these firms would be documented. The basis for a contract (or contracts) with these firms would be established through an analysis of the cost of distribution and the expected price that would have to be paid to motivate these distributors.

Distribution from the central to provincial level might be covered most effectively by contracting a freight forwarding firm or a pharmaceutical or consumer goods distributor. The potential for utilizing other wholesale receiving points, such as regional agencies of pharmaceutical or consumer goods firms, should also be examined. The costs and benefits of CEASS procuring its own trucks and drivers to carry out central to Unidad Sanitaria distribution should also be assessed and compared with private sector options in terms of cost, efficiency, effectiveness, and sustainability.

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[6]The MOH personally solicited the assistance of soft drink bottlers in several regions to distribute ORS to remote communities. As there is no provision for paying the bottlers for their service, this will probably be done on a short-term basis in response to the cholera epidemic. However, it might be developed into a sustained system if proper incentives are in place.

The assessment should also document and analyze questions involving wholesale and retail distribution points for ORS at the district and area levels which are closer to the end-users. The current MOH plan is for ORS to be delivered regularly to the MOH clinics or posts from the Unidades Sanitarias. Clinic and health post personnel are, in turn, to assure distribution to the UROS/C, shops, and homes in the community.

However, as is the case with the Unidades Sanitarias, the exclusive use of the MOH's institutions might not assure wide coverage. There are not health posts or clinics in every community, and the posts and clinics do not have the storage space, personnel, and transportation required to undertake widespread distribution on a regular basis.

The assessment should thus include an analysis of the potential for utilizing other locations as distribution outlets, including private shops and pharmacies. These should be tied to the UROS/C system. The existence of private sector ORS and other oral rehydration products in the market should be documented and analyzed as part of this activity.

Based on the assessment, a plan would then be developed proposing a phased-in approach to sustained ORS distribution. It is expected that the plan would utilize USAID or other international agency funds initially until the system becomes self-financing.

The second step would be to implement the plan. The exact scope of activities required to implement such a plan would be identified as part of the in-depth assessment.

B. Provide immediate technical assistance to CEASS and training at the URES and District levels to improve systems for the management of public sector ORS inventories

Such assistance to the public sector system is required to assure immediate responsiveness to the cholera epidemic and to increase the effectiveness of the public sector distribution system.

The objective of such technical assistance would be to establish a system which tracks inventory levels; amounts distributed to each level of the MOH system and to NGOs/PVOs; and amounts distributed to health promoters, homes, and to other community-level outlets. Technical assistance should include training in the maintenance of safety stocks at the national, Unidad, and District levels, with maximum distribution to the Area and other end-user levels.

The system should also explore ways to track amounts distributed to end-users so that information can be provided to the national CDD program for evaluating current and future programming. The system should focus on assuring that the newly established UROS/C are constantly well-supplied with ORS.

However, such a system should be established only in close coordination with UNICEF, PAHO, and the essential drugs program. The ORS management system should be viewed as a subsystem of a larger, integrated system that

addresses the management and distribution of basic drugs and medicines. There is justification for providing special training and treatment for ORS as a subsystem within the larger essential drugs system. Under current policies, ORS is expected to be provided free of charge rather than sold, and ORS should be freely dispensed to homes, shops, and UROS/C rather than dispensed solely through health service outlets.

Such technical assistance and training should include as one of its principal objectives the definition of how alternative distribution systems will work with and complement the public sector distribution system. The activities undertaken to implement this recommendation should be closely coordinated with and informed by the activities undertaken in recommendation A.

The purchase of hardware and software may be required within the scope of recommendation B, as part of the provision of systems technical assistance to CEASS. The World Bank or another international agency may be purchasing hardware and software for CEASS to use for the essential drugs program, and these efforts should not be duplicated. USAID/La Paz might consider purchasing hardware and software for CEASS' use under the guidance of a qualified technical expert if and when such an effort has been clearly coordinated with the essential drug program efforts.

C. Provide motivational training for Unidad Sanitaria and District and Area level MOH personnel responsible for distributing ORS in the public sector

PATH/PRITECH's analysis of ORS distribution indicates that at the District and Area health post and clinic levels, nurses, health promoters, and mothers club leaders are often responsible for distribution of medical supplies, including ORS, to the <u>user</u> level. This distribution is distinct from that of CEASS (central level) and the URES (regional level); the latter two entities are responsible for wholesale distribution of medical supplies from the central to the regional level (CEASS) and from the regional to the District level (URES).

Many of the medical supplies used in the MOH's clinics and health posts are not to be dispensed in the home or used without the direction of trained medical personnel. For these reasons they are kept under lock and key within the hospital, clinic, or health post. However, ORS is a different kind of product. With proper direction, it can and should be made available and used outside of the MOH's clinics and health posts, in small shops, markets, and private homes. However, there seems to be a tendency among field-based health personnel to "hoard" ORS, as if it were a scarce product to be used only under direction of MOH personnel and in MOH institutions, like antibiotics or syringes. This attitude is partially attributable to the sporadic distribution of ORS and other supplies to the District and Area health posts and clinics, making the scarcity real.

In addition, there also seems to be an unofficial norm among field personnel suggesting that it is preferable for a mother whose child has diarrhea to bring the child to the health post or clinic for treatment. Although this may be ideal, the health posts and clinics are often not

conveniently located and mothers are discouraged from bringing their children for an illness that is perceived as nonlife threatening.

The MOH has endorsed a nonclinic approach to the use of ORS by establishing UROS/Cs in peri-urban and rural areas. The UROS/Cs are intended to be private homes or small shops in the community whose owners/proprietors will work as volunteer oral rehydration resources. Parents will be able to obtain simple advice about treating their children's diarrhea and receive free ORS packets through the UROS. The UROS/C require ongoing stocks of ORS to maintain credibility and to function effectively, and the District and Area hospitals, health posts, and clinics are supposed to assure that their local UROS/C are stocked.

Given these conditions, a series of motivational training seminars should be targeted to nurses, health promoters, and mothers club leaders in selected districts. Motivational training should be targeted to MOH service personnel in the field. These individuals have the most contact with the users of all medical supplies, including ORS. The purpose of the training would be to motivate field-based health personnel to maintain constant supplies of ORS in private homes and the UROS/C. The emphasis would be on understanding how ORS is distinct from other medical supplies, and why and how it can be used effectively in the home.

Such training should be designed so that it complements PAHO's and CEASS's training workshops for the essential drug program which are scheduled to start in July 1991. PAHO and CEASS representatives have agreed that it would be useful and valuable to provide an extra day of training specifically targeted to ORS distribution. Such motivational training should reflect the same norms and standards that the PAHO/CEASS training will promulgate.

Implementation plan

It may be desirable to postpone motivational training activities until behavioral research such as that described in recommendation D (below) has been completed. The results of the behavioral research are expected to influence the messages and approaches required to optimize distribution and use of ORS at the field level. However, the current high level of interest in and support for improved distribution and use of ORS in Bolivia may make it compelling to act sooner rather than later.

There may be three phases involved in motivational training:

1. Planning phase

   a. Review conditions in various districts and select target districts.*

   b. Develop training criteria and curriculum. Review curriculum with representatives of Bolivian groups involved in diarrheal disease management (PROCOSI, CCH, MOH, PAHO, UNICEF).

c. Identify and contract Bolivian collaborating organization(s) and select trainers.

* Districts in the Departments of Riberalta, Cobija, Trinidad, Santa Cruz, Cochabamba, La Paz, and El Alto are recommended: these represent the most populated regions of the country, plus the regions which are simultaneously the most difficult to reach and most likely to experience cholera.

2. Field phase

a. Conduct training-of-trainers.

b. Carry out observation of motivational training sessions in selected districts.

3. Evaluation phase

a. Evaluate impact of training.

D. Conduct qualitative research in selected communities to assess the degree to which behavioral, cultural, and educational factors influence ORS use and how these factors interact with factors related to access to and availability of the product at the community level

PATH/PRITECH's findings suggests that sporadic or limited access to ORS is one obvious factor influencing the limited use of the product in Bolivia. However, if distribution and access are eliminated as variables that work against use of ORS, will utilization, in fact, increase and to what extent? The reasons why mothers of children with diarrhea do not use ORS even when they have ready access to the product, needs to be more carefully understood through qualitative research.

Several recent studies suggest that poorly-understood factors influence behaviors surrounding ORS use in Bolivia. The 1989 DHS survey found that while 70% of mothers claim that they know about ORS, only 30% use it. The reasons for nonuse include limited or no access, the perception that the diarrhea is not serious enough to warrant use of ORS, and lack of knowledge and time.

An in-depth analysis of the same survey suggests that there is an important need to understand use of ORS. Forty percent of children who died from diarrhea were reported by their mothers to have received ORS before their deaths. High percentages of these same mothers were able to recite accurately how to mix and use ORS. Why, then, did these children die?

Representatives of the CCH stated that the results of baseline studies carried out in four health districts also suggest the need for more in-depth behavioral research. For example, research in the Samaipata district found that many rural mothers have the tradition of introducing sugar water, tea, and other liquids during the first week after birth. This tradition (whose origins are not well understood) may be a cause of

infant diarrhea, in which case programs aimed at treatment fail to address at least one obvious preventive measure.

The results of behavioral research would be utilized to shape program interventions concerning diarrheal disease management and ORS distribution and use. The research should be conducted in a qualitative, "teaching" format so that the subjects gain value by participating in the research.

Implementation plan

If behavioral research is undertaken, it may be important to appoint an advisory group to assist in guiding the research and whose members will use the results. Such an advisory group might include representatives of the MOH, CCH, UNICEF, PAHO, and USAID/La Paz.

There may be four phases to behavioral research activities:

1. Planning/assessment phase

   a. Review all available reports concerning ORS use, KAP concerning diarrhea, ORS, etc., in Bolivia.

   b. Appoint and convene an advisory group.

   c. Conduct a field assessment to determine a maximum of three key research questions, identify locations for research, and identify collaborating Bolivian institution(s). Interview Bolivians involved in diarrheal disease and ORS programs to further inform the research design.

   d. Develop the research design (in-depth interviews, focus group discussions, etc.) and the research plan (number of sites, locations, length of time required). Review and revise research design and plan.

2. Training and project start-up phase

   a. Prepare training materials and research materials.

   b. Conduct field visit to train local researchers and initiate research.

3. Monitoring phase

   a. Conduct field visit to monitor research in process.

4. Evaluation phase

   a. Conduct final field visit to review research results.

   b. Prepare an analysis of results in collaboration with Bolivian institution(s) and disseminate for use by advisory groups (MOH, CCH, and other groups involved in diarrheal disease programs in Bolivia).

VIII. SUMMARY

Interviews with representatives of PAHO, UNICEF, and the MOH indicate that the next twelve months are an optimal time for USAID/La Paz to support efforts to improve the distribution, use, and promotion of ORS. The current concern about cholera has reawakened awareness of the dangers of diarrheal disease. The MOH has responded with a campaign to re-establish the UROS/C, as well as promotion and education efforts. At the same time, the MOH is working toward decentralization, making each Unidad Sanitaria responsible for establishing local programming goals, methods for implementing programs, and systems for distributing supplies. If implemented with proper training, motivation, and systems development, decentralization could help greatly to increase access to ORS and other medical supplies at the District and Area levels closer to the end-user. Finally, the essential drugs program is developing systems to distribute and supply the Unidades Sanitarias with basic medicines which will be sold in hospitals, clinics, and postas sanitarias. Appropriate and well-coordinated efforts by USAID/La Paz to interact with this system in order to assure that ORS is adequately addressed will be timely.

Additional activities were recommended by the individuals interviewed for this report. Some of these activities are of urgent and high priority, but may not be feasible for USAID/La Paz to support. These include:

A. Broadcast of television and radio spots developed for the current CDD program

Due to a shortage of funds to purchase broadcast time, these promotional messages are broadcast free of charge at the discretion of the television and radio stations. This means that broadcast is sporadic and not necessarily undertaken during peak viewer/listener hours. The feasibility of USAID funds supporting the purchase of air time could be considered if a reliable advertising agency were identified that could be given a contract to purchase and manage the air time. However, broadcast time is expensive and can only be done for a period of several months. Promotion also has only a short-term impact unless the campaign is renewed and re-broadcast over a period of several years. What is required is, in fact, an ongoing <u>information program</u> about diarrheal disease rather than a short-term campaign.

In addition, paying for air time might dissuade television and radio stations from donating air time in the future to other public purpose campaigns. However, the importance of the current campaign, particularly in light of the cholera scare, should not be underrated.

B. Production and printing of materials concerning the use of ORS and other essential drugs

USAID/La Paz may wish to address this need using funds other than those from the CCH ORS program. Such support would constitute part of USAID/La Paz's support of the entire essential drugs program, and would not be limited to ORS.

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APPENDIX 1

Individuals Interviewed and Locations Visited

Dr. Alvaro Muñoz Reyes, Executive Director, CCH
Dr. Joel Kuritsky, Epidemiologist, CCH
Dr. Jorge Velasco, Education Specialist, CCH
Rita Fairbanks, Education Specialist, CCH
Javier Palazuelos, Logistics Consultant, CCH
Glynne Leonard, Information Systems Consultant, CCH and the World Bank
Dra. Marta Mejía Soto, National Director, CDD Program, MOH
Dr. Roberto Bohrt Guzman, Director, Maternal-Child Health Division, MOH
Lic. Misael Miranda, Director, CEASS
Lic. Jose Luis Sanchez, Administrator, CEASS
Lic. Christina Gardelli, PAHO
Dr. Philippe Lamy, Consultant, PAHO
Dr. Jorge Mariscal, Program Officer, UNICEF
Dra. Miriam Lopez, MOH, Maternal-Child Health Division, La Paz
Dra. Ana Maria Agilar, PROCOSI
Lic. Susana Barrera, PROCOSI
Lic. Ana Maria Villaroeal, Social Communications, Ministry of Health, La Paz
Dr. Alene Gelbard, consultant to the MOH
Dr. Fernando Gonzalez, Director Maternal-Child Health, Unidad Sanitaria/Cochabamba
Dr. Javier Salinas, Director URES, Unidad Sanitaria/Cochabamba
Sr. Roberto Sivil, Warehouse manager, Unidad Sanitaria/Cochabamba
Dr. Johnny Nava, District Director, Quillacollo (US/Cochabamba)
Dr. Antonio Quiroga, District Director, Sacaba (US/Cochabamba)
Sr. Reynaldo Salomon Mendez, District Administrator, Sacaba
Licda. Bustamante, District Sacaba
Dra. Consuelo Ortiz, Area Doctor, Vinto (US/Cochabamba, Quillacollo District)
Lic. Gregoria Fernandez, Area Nurse, Vinto
Dr. Hugo Foainini, Director Maternal-Child Health, Unidad Sanitaria/Santa Cruz
Lic. Ruth Galves, Nurse, Maternal-Child Health Division, Unidad Sanitaria/Santa Cruz
Dra. Carmen de Alva, Director URES, Unidad Sanitaria/Santa Cruz
Dr. Michel Bossuyt, Consulting Physician, Unidad Sanitaria/Santa Cruz
Sr. Johnny Caballero, Warehouse manager, Unidad Sanitaria/Santa Cruz
Lic. Lourdes Camacho, District Nurse, Montero (US/Santa Cruz)
Sister Jordan, Area Nurse, Posta Sanitaria Kolbe (Montero District)
Dr. Cassal, Area Doctor, Posta Sanitaria Kolbe
Lic. Angelina Coca, Area Nurse, Posta Sanitaria "Plan 3000" (US/Santa Cruz, District V)
Dr. Esprella, Area Doctor, "Plan 3000"
Lic. Lili Sanchez, Posta Sanitaria "Buen Samaritano" (US/Santa Cruz, District V)
Lic. Walter Soriano, Marketing Director, PROSALUD
Dra. Jaqueline Reyes, Maternal-Child Health, Unidad Sanitaria/La Paz
Lic. Gonzalo Muñoz Reyes, Technical Director, Laboratorios INTI, La Paz
Charles Llewellyn, Primary Health Specialist, USAID/La Paz
Paul Hartenberger, Director, Health and Human Resources, USAID/La Paz
Dr. Alene Gelbard, consultant to the MOH
Lic. Antonio Gomez, Information Systems Consultant, CCH

APPENDIX 2

Reports Used and Referenced

1. Ministerio de Previsión Social y Salud Publica, Republica de Bolivia. Action Plan for Control of Diarrheal Diseases, 1991.

2. Various ORS distribution reports, January 1990 through March 1991. CEASS, Ministerio de Previsión Social y Salud Publica.

3. Encuesta Nacional de Demografia y Salud, 1989. Instituto Nacional de Estadistica, Bolivia, with the Institute for Resource Development/Macro Systems, Columbia, MD.

4. Maternal Child Health in Bolivia: Report on the In-Depth DHS Survey in Bolivia, 1989 by A. Elisabeth Sommerfelt, J. Ties Boerma, Luis H. Ochoa, and Shea O. Rutstein. Institute for Resource Development/Macro Systems, Inc., Columbia, MD, April 1991.

5. Evaluación Nacional Conjunta de los Programas de Control de Diarréas e Infecciones Respiratórias Agudas, 1988. Ministerio de Previsión Social y Salud Publica, Bolivia, with The Pan American Health Organization, the World Health Organization, and UNICEF.

APPENDIX 3

Analysis of Twelve Months of National ORS Distribution Data

For the twelve month period April 1, 1990 - March 31, 1991, inventory turnover ranges from a low of 4.7% of stock distributed during the fourth quarter of 1990, to a high of 33% of stock distributed during the first quarter of 1991.

The following flow of ORS was observed for each quarter during the same twelve month period, per CEASS reports (in number of packets):

(a) Second quarter 1990:

Stock previous quarter	153,000
Received April 18	1,335,000
Total stock	1,488,000
Distribution to seven US All dated 5/28/90	230,000
Remaining stock at 6/30	1,258,000
Rate of distribution	15%

There is no detail in CEASS distribution reports of distribution to NGOs/PVOs or any entities other than the Unidades Sanitarias.

(b) Third quarter 1990:

Stock previous quarter	1,258,000
Received Sept.	693,750
Total stock	1,951,750
Distribution to ten US Dates unclear	312,500
Remaining stock 9/30/90	1,639,250
Rate of distribution:	16%

(c) Fourth quarter 1990:[7]

Stock previous quarter	1,639,250
Received	--0--
Distributed to two US and a number of NGOs,PVOs, and other groups [8]	77,725
Remaining stock (author's figures)	1,561,525
Rate of Distribution:	4.7%

(d) First quarter 1991:[9]

Stock previous quarter	1,561,525
Received	--0--
Distributed to US	465,600
Distributed to NGOs/others	60,300
Total distributed	525,900
Remaining stock	1,035,625 (3/31/91)
Rate of distribution	33.6%

[7] Reported detail for fourth quarter shows some duplications with reported shipments from third quarter. These duplications, as well as some minor mathematical errors, were corrected by the author. The figures used above are the author's calculations based on reports from CEASS.

[8] In addition to reported distribution during the present quarter, the total also includes some quantities reported as having been distributed to two US during previous quarters, plus reported distribution to NGOs, PVOs, and other groups in previous quarters.

[9] The author found what appear to be mathematical errors in the reports and re-calculated the first quarter figures based on detail provided in the CEASS report. The CEASS figures as reported are as follows:

Stock previous quarter	1,558,525
Distributed to US	464,900
Distributed to NGOs/others	60,300
Total distributed	533,400
Remaining stock 3/31/91	1,025,125

The difference between the reported figures and the author's figures amount to a reported previous quarter stock that appears to be overstated by 3,000 packets; and reported first quarter distribution that appears to be overstated by 7,500 packets.