Oral Rehydration Therapy in Afric

Report of a Workshop

Lilongwe, Malawi

March 29-30 1985

Technologies for Primary Health Care

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ORAL REHYDRATION THERAPY IN AFRICA

REPORT OF A WORKSHOP

LILONGWE, MALAWI

MARCH 29 - 30, 1985

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PREFACE

A major effort among international health agencies in the last two years has been to increase the knowledge and use of oral rehydration therapy (ORT) throughout the world. In order to disseminate information about ORT and provide a forum for the exchange of ideas and experiences, a regional workshop on oral rehydration therapy was held in Lilongwe, Malawi on March 29th and 30th. The workshop was funded by the U.S. Agency for International Development and coordinated by the PRITECH Project. The workshop followed four days of discussion on AID's Combatting Communicable Childhood Diseases (CCCD) program for Sub-Saharan Africa.

In Africa, where diarrhea is a major problem, the underutilization of ORT is particularly tragic since the low cost and accessibility of ORT makes it particularly appropriate. Recognizing this, a concerted effort is now under way to introduce and to spread oral therapy throughout Africa. The conference in Lilongwe, one part of this effort, represents the most extensive ORT conference ever held in sub-Saharan Africa. Over 160 individuals representing over 30 countries participated. By providing a forum for individuals to discuss their activities and to exchange ideas, the conference provided an opportunity for each of them to gain valuable information regarding ORT activities.

FORWARD

Welcoming Message of AID Administrator M. Peter McPherson

"It is my pleasure to welcome you, distinguished guests, to this regional workshop on oral rehydration therapy. We are pleased that so many of you were able to attend, and we look forward to your comments and suggestions at this meeting. Two years ago AID hosted a similar meeting in Washington, D.C. known as ICORT. My participation in that conference and my subsequent discussions with scientists and leaders from around the world have convinced me that AID can and shall increase significantly its support for oral rehydration therapy. This technology can be administered in hospitals, clinics, communities and households, and it is safe, effective, and inexpensive. Most importantly, it can save millions of lives.

"In the two years since ICORT, we have worked together to expand the use of ORT. AID has doubled its support for ORT programs from 1983 to 1984. In Asia, where AID helped support research on the development of oral rehydration therapy, we are now assisting a number of countries in the expansion of ORT services. In Africa, where infant mortality rates remain the highest in the world, we are supporting several countries' efforts to initiate ORT programs.

"The U.S. Congress has also recognized the importance of ORT in child survival and has doubled the resources available to the Agency to undertake programs that will contribute directly and dramatically to improvement in the health and well-being of children in developing countries. This regional workshop can be the springboard for action. It is an opportunity to redouble our efforts. It is an opportunity to share our successes, our problems and our solutions. It is an opportunity to examine approaches to integrating the therapy into a broader primary health care package which includes breastfeeding, growth monitoring, immunization, family planning, and basic sanitation.

"Programs will differ among countries and communities. Some of you present are working with governments which are not yet convinced of the need to expand availability of oral rehydration therapy. Many of you are dealing with the difficult problems of planning, implementation, and evaluation. Nonetheless, by sharing our experiences, we can help each other towards our common goal of improving the lives and survival chances of children.

"In closing, let me thank you for this opportunity to welcome you and wish you a successful meeting over the next two days."

I. INTRODUCTION*

It has been 18 years since oral rehydration therapy (ORT) was demonstrated to be effective in the treatment of cholera. Cholera is a dramatic disease; ORT was a dramatic discovery. Lancet has called this technology "potentially the most important medical advance this century." If 18 years seems like a long time before major implementation of ORT programs, remember that it took the World Health Organization ten years to decide that it was important to promote oral rehydration.

ORT programs are the leading edge of programs which are appropriate and effective and which will help achieve health for all. Diarrheal disease now results in some five million deaths a year. Of those, about 1.5 million occur in Africa. Over the past seven years, the WHO-sponsored oral rehydration effort has convinced some 90 of the world's developing countries to formulate Control of Diarrheal Diseases (CDD) plans, and of those, some 70 are now in full operation. In Africa, 28 countries have established plans, and 18 of them are operational. Africa has by far the largest proportion of deaths occurring among children under the age of five, and it is estimated that some 50 percent of those deaths are associated with diarrhea (i.e., diarrhea occurs during the terminal episode). Diarrheal disease is indeed a major cause of morbidity and mortality and a major contributor to malnutrition. It is also an extremely expensive drain on limited health budgets, often accounting for one-third of all hospitalization costs. In Kingston Jamaica, for example, intravenous fluid use was significantly reduced after the introduction of ORT. This reduction is important not only because the costs of intravenous rehydration are high, but also because the complications of intravenous rehydration are considerable. In addition to saving hospital costs, sometimes very dramatically, ORT use has reduced diarrhea mortality. In a recent study in Egypt, deaths associated with diarrhea declined from 18 per 1,000 children to just a little more than 10 per 1,000 children in a six-month period. Oral rehydration was introduced at the community level with back-up support provided by surrounding clinics.

The Technology

The first thing to remember about ORT is that it is a remarkably robust and flexible technology. The oral rehydration solution (ORS) recommended by the World Health Organization is essentially isotonic. Children with hypotonic dehydration are actually more safely treated with this isotonic solution than when treated intravenously. Fewer children have seizures and fewer die. Both hypertonic and hypotonic dehydration are treated effectively with the WHO ORS formula. The ORS formula has also been shown to be 91 to 99 percent effective in the treatment of neonates (children less than one month old). ORT is a technology which can be used from the very earliest days of life through adulthood.

What about other ingredients for ORS? In comparing sugar-salt solution and standard glucose electrolized solution (the WHO formula), mildly to moderately dehydrated children are rehydrated over roughly the same period of

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* Opening address by Jon Rohde, Management Sciences for Health.

time. However, it should be pointed out that the sugar-salt solution has no potassium, and children can become hypokalemic. Though there are definite advantages to the WHO ORS formula, some substitutes do work and can be very safe and effective.

Nutrition and ORT

The importance of nutrition should not be overlooked. Oral therapy has always been conceived to be two interventions: oral rehydration and feeding. Without one, the other is not effective. Early data showed that children who are fed during diarrhea gain weight much better. Children who are starved actually have diarrhea longer than children who are fed. It is not only correct to feed during diarrhea, it is better to feed. Essentially, combining oral rehydration and feeding reverses the cycle, improving nutrition and reducing diarrhea.

Several interventions in diarrhea, aside from oral rehydration, have been shown to be quite effective. Breast milk is an extremely important part of the oral therapy. Not only does breastfeeding effectively protect against incidents of diarrhea, its continuation during therapy is an integral part of a treatment regimen. Breastfeeding is as important for recovery as for its nutritional value.

Handwashing and Diarrhea

There has always been talk about handwashing, but what was the evidence that it worked? Careful studies now show that handwashing with soap, after defecation and before eating, is associated with a 50 percent drop in diarrhea.

ORT and Cholera

Oral rehydration programs have often followed cholera epidemics. The number of countries reporting cholera in the last 10 or 15 years has dramatically increased, with most of this increase in Africa. Because cholera is such a dramatic disease, it provides an important opening for establishing effective oral rehydration efforts. In truth, cholera produces far less mortality and morbidity when compared to childhood diarrhea.

Program Implementation

What are the major elements in the implementation of an ORT program? First, one must determine the importance of diarrhea in a given country. It is not necessary that national field-based surveys be conducted. As a first step, one could count pediatric beds occupied by diarrhea cases; adding up the amount of time people spend treating diarrhea in outpatient departments is helpful. A crude estimate of diarrhea deaths can be determined by examining hospital records.

In many areas, 25-35 percent of deaths in pediatric hospitals are related to diarrhea. The close association between diarrhea and malnutrition should be defined. In Haiti, for example, a household survey in the capital

city found that three percent of children had third degree malnutrition. In the outpatient clinic, however, ten percent of the children coming for rehydration had third degree malnutrition. Thirty-five percent of the children being admitted for diarrheal disease had third degree malnutrition, and 65 percent of the hospital deaths occurred in children who were severely malnourished. The association, then, between diarrheal disease and malnutrition became dramatically apparent. These findings led to the nutritional measures to be taken in caring for malnourished children and malnourished mothers. This study was done with hospital based data, not national surveys.

The second major step in the implementation of an ORT program is to develop a plan. Without a plan, it is not possible to mobilize a health system.

The third element is training. Observations like the following are the basis of teaching: the appearance of the dehydrated child, the dramatic improvement in the signs of dehydration when ORS is given, the dehydrated child's drinking the solution, the fact that vomiting is not a practical problem with patients, and the fact that mothers can give ORS and get an effective clinical result. Although seminars and workshops are valuable, the methodology of oral rehydration will not be internalized by health providers until they have done it themselves. Once they have rehydrated five children at a pediatric hospital, they will have become experts and will be able to help other people do the same.

Some people have said that mothers cannot learn to make a reliable solution, but where mothers are making errors, the problem is really one of not teaching them properly. In Bangladesh, village health workers have taught four and a half million mothers to make effective, safe solutions. A five percent sample of home-prepared solutions has been analyzed in the laboratory, and 99 percent have been less than 120 millequivalents of sodium/liter. By the same token, if doctors do not learn how to use ORT or do not accept the technology, it is because the training they received was weak and inappropriate.

ORT can be introduced through multiple means and should not be kept just in the health sector. Oral rehydration is a behavioral response that should extend from the highest levels of health ministries to the village mother. To introduce ORT, we must learn to communicate with various levels of providers--traditional healers, pharmacists, and other persons who dispense health care. To accomplish this, radical change must be brought about in traditional communications strategy. The most oppressive ignorance is among program staff. It is necessary to better understand and appreciate the perceptions, concerns and practices of the people. It is not their job to understand the program, but rather the program's to know them better.

Medicine as practiced today, has been a provider-oriented, supply-side approach. In traditional societies a consumer orientation is imperative for demand creation. The skills of anthropologists, marketing specialists, and other social scientists, are needed along with those in the medical profession. There needs to be a dialogue between clients, and the provider must be oriented to client needs. Whether it be called a social marketing or a people-oriented approach, it needs to be included in oral rehydration programs.

Organization of ORT Programs

Finally, there is the challenge of organization. Most, if not all, governments have committed themselves to the goal of "health for all by the year 2000." A strategy of primary health care has been formulated to this end. But many nations have been unable to mobilize to reach such an ambitious and all-encompassing goal. Too many people have been working in too many directions trying to tackle too many problems all at once. A national ORT program, in conjunction with other health programs such as EPI and malaria control, offers the ideal paradigm for a national primary health care strategy. It is not a vertical approach but calls upon the entire system to participate fully. It is categorical; it is focused; and most importantly, it can be done. It fulfills admirably all the criteria enunciated at Alma Ata. ORT is an appropriate scientific technology that is affordable, dependent largely on paramedical personnel, based soundly in the community, socially relevant, and often based on traditional practices that can be suitably modified to complement new scientific knowledge. All these are basic elements of the primary health care message.

Lead a country in a successful ORT program and it will be admirably prepared to take on, incrementally, other elements in primary health care as deemed appropriate to that particular nation's needs. An ORT program requires a sound plan, clear definable goals, and precise objectives by which to gauge progress. The plan should spell out the role of everybody in the health system. Then comes the development of an appropriate training plan based on clear tasks and the competency expected of each level. The university specialist, community health workers, supply officers, administrators, and supervisors will all know what is expected of them. Modern communication approaches will be adopted to affect consumer behavior, starting first with an understanding of the population, and only then developing messages for mass media and health workers to inform and convince mothers of the oral therapy message.

All of the health providers involved in health care will be informed. It is important to recognize the role played by private practitioners, traditional healers, drug sellers, and others and to involve them in order to further extend coverage. Strategies will be developed to mobilize the commercial sector, which is already in many villages and towns beyond the reach of the health system. In many countries the commercial sector has developed an ORS production capacity and has widely distributed the product, but too often practitioners have prescribed and the public has demanded useless anti-diarrheal medicines. Some countries may follow the lead of some Asian nations and ban these products from the marketplace. Most will find, however, that marketing through the village commercial network will reach far beyond their health systems and will allow access to this technology even where there is no doctor.

Improved information systems will be developed with which to monitor patient use, diarrheal deaths, hospital admissions, and supervision visits. These data will be used to make program adjustments based on fact, not on guesses. Periodic sample surveys will be used to refine and further determine the data base. With sensitive and reliable information, it is possible to measure what has been done, and what remains to be done. What's more, the minister of health, the government, and the people will see that an ORT program can make a difference, that a very effective, high-coverage, appropriate health technology can be delivered to the people.

II. ALTERNATIVE APPROACHES IN ORAL REHYDRATION THERAPY*

When attempting to determine what type of ORT program or products are suitable for a given country or area within a country, it might be helpful to consider the advantages of the different options when measured against such criteria as:

- physiological appropriateness,
- availability,
- effectiveness, and
- cost.

The choices of solution for promotion are the premixed packets containing the complete formula (ORS), either imported or produced nationally; cottage-industry/locally produced ORS packets; or the homemade sugar-salt solution.

Physiological Appropriateness

In the Diarrheal Disease Control component of the Combatting Communicable Childhood Diseases (CCCD) program, the stages in the progress of diarrheal disease have been identified as pre-onset, mild diarrhea, moderate diarrhea, moderate dehydration, severe dehydration, and death. Case management also progresses with the first attempt being to prevent diarrhea. Mild and moderate cases are ideally treated in the home with the sugar-salt solution. Moderate to severe dehydration is ideally treated with the complete formula solution (either imported or produced nationally), and extremely severe dehydration with intravenous solution.

The choice of treatment within the context of physiological appropriateness, then, is rather self-explanatory and clear cut with the severity of the illness determining the appropriate treatment. Therefore, the type of solution would be rated according to the degree of illness it is being used to treat.

Availability

From the perspective of availability, the solution might be rated quite differently despite the severity of the illness. Obviously where the distribution system for premixed solutions is found wanting, the homemade sugar-salt or local cottage industry produced solution would rate high assuming sugar and salt are common household items, although it is recognized that the premixed complete formula packets are better for severe cases. (It might be added parenthetically that other home solutions might be even better.)

Another aspect of availability is the presence in the home of standard measuring devices such as cups, spoons, or bottle caps. Everything being equal, if the decision is made to focus on promotion of the homemade solution,

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* Presentation by Melinda Moore, Diarrheal Disease Control, CCCD Program, Central Africa.

it might be well to consider the production and distribution of standard measuring cups and spoons.

Effectiveness

Whereas the sugar-salt solution or other homemade solution might have a high rating in relation to availability, from the point of view of effectiveness, these homemade mixtures might be lower on the scale, and the premixed ORS complete formula given top marks. For mild diarrhea the sugar-salt solution is probably as effective as the complete formula premixed salts and might get an equal rating. However, for a more severe diarrhea and accompanying dehydration, it would get a lower rating.

Cost

In some areas the premixed imported package might be too expensive for the average householder, and therefore it would be wise to promote the home mix which would rate high within the decision-making matrix from the cost point of view. On the other hand, in those cases where the diarrhea is severe, the premixed and "complete" formula is the one which should be used because it is more effective.

These same criteria can be applied when studying the feasibility of producing a commercial product in-country. That is, it must be looked at from the point of view of availability, effectiveness, cost, and safety. What are the costs of manufacturing it in-country? Who will provide the quality control? It might be cheaper and more effective to import the complete formula. At the same time, it might make it less available.

In summary, all of the above factors must be taken into consideration when mounting ORT programs, keeping in mind that some of these decisions might change over time as new "super ORS" is developed.

III. DIARRHEA AND NUTRITION*

The single most important contribution to childhood malnutrition is diarrhea. Loss of appetite, malabsorption of food, catabolism, and the cultural practice of decreasing or withholding food, are all associated with diarrhea.

Feeding with solid foods must also be continued if the child is weaned and with breast milk for infants while ORS is given. It is especially important for the convalescent child who needs extra calories to meet the demands of illness and for catch-up growth.

Gruels, which are often so thin as to have little nutritional value, should be avoided. Well-cooked legumes and energy-dense foods should be given (if foods are too bulky, the child will stop eating before he/she has had enough calories). Breast milk should never be discontinued.

The new "super ORS" solutions, such as those with a rice powder base, show promise. Clinical studies have shown that substrates such as amino acids and rice powder (carbohydrate and amino acids) will decrease duration and volume of diarrhea, and the more calories per volume of the new ORS solutions should positively impact on the nutritional state.

The U.S. National Research Council manual, Management of Diarrheal Diseases at the Community Level (Washington, D.C. 1981), makes a number of recommendations regarding the nutritional management for treating diarrhea. These include the following:

1. Continue feeding during diarrhea.

2. Feed the child frequently with "nutrient dense" foods.

3. Continue feeding during the convalescent stage, increasing the food intake (convalescent children require 125% of their normal food intake).

4. All levels and types of health providers should participate in the treatment of childhood diarrhea always keeping in mind that the mother is still the primary provider of care.

5. Interesting research questions which should be asked in the field are:

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* Presentation by Richard Cash, Harvard University.

- What are the best local foods available?
- What are the current feeding habits during diarrhea?
- What are the cultural and economic constraints to proper feeding during diarrhea?
- What is the best way to train health workers in the importance of food during treatment?

IV TRAINING AND DEMAND CREATION

Recruitment and Training of Health Providers*

A major problem in the promotion of ORT is the resistance to its use by health care personnel themselves--physicians, nurses, pharmacists, and traditional practitioners. To a large extent this is due to an adherence to past experiences, knowledge, and beliefs. In the training of health care providers in oral rehydration therapy, there is nothing more valuable than active participation in the treatment of a diarrhea patient with oral rehydration solution.

A good place to begin changing attitudes of health professionals is with the medical opinion makers--the professors of pediatrics and medicine. As their opinions are sought after, they often set policy. It is often difficult to train professors, however, because they are so used to being trainers themselves. Therefore it is best that they become actively involved in treating diarrhea patients with ORT early in their training. The same strategy holds true for other staff and private physicians.

Another important step to increasing awareness and use of ORT is to initiate some impact on the curriculum of medical, nursing, and pharmacy schools. Traditionally, the physiology, bacteriology and treatment of diarrheal diseases do not receive much emphasis in the curriculum. To give it importance, questions on diarrhea should be part of the examinations required for passing given by these institutions.

Manuals are clearly valuable for training health service workers; WHO has, in fact, developed a manual for training community health workers in the treatment of diarrhea. Use of such teaching aids, however, must be tied to practical demonstrations in hospitals and clinics. Consequently, demonstration centers are needed at hospitals in individual countries or regionally in Africa where practitioners can do intensive practical training in ORT.

If diarrhea is seasonal, training should be intensified or carried out immediately before the onset of the diarrhea season. This may well reinforce its use. Training should be given in all aspects of diarrhea in treatment and prevention.

After professionals learn about ORT, they have to use it. How does one get pharmacists and practitioners to increase sales/use of ORS? The low profit margin pharmacists usually make on selling ORS may dampen their enthusiasm. The profits to be made in sales volume need to be stressed and thought should be given to a type of sales incentive system.

The pharmacy industry is particularly important in the promotion of ORS. Key individuals in this promotion are drug detail men. In rural and urban areas of the developing countries, for example, detail men are often the most important sources of information to physicians.

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* Presentation by Richard Cash, Harvard University.

As part of any training program, the misuse of sometimes harmful drugs should be discussed. Many anti-diarrheal drugs have little value and divert attention from fluid therapy.

The Mass Media and Demand Creation Among Consumers*

There are five steps in motivating health providers and mothers to use oral rehydration therapy. These are:

1. Exposure: The mother must be exposed to the idea of ORT.

2. Acceptance: She must accept the idea as relevant.

3. She must understand the concept and the reality of rehydration and especially of dehydration.

4. She must try ORT until she does it correctly.

5. She must adopt the practice and become a "repeat" user.

This "communication" strategy has been developed in Honduras, The Gambia, and, most recently, in Swaziland as part of the AID Mass Media and Health Practices (MMHP) Program carried out by the Academy for Educational Development.

The first thing to say about "communications" is what it is not. It is not mass media alone. Unfortunately, it has been stereotyped as radio broadcasting--which is only one aspect of successful communications programs. The other aspects are the graphic arts and the training of people in the local community.

Furthermore, a communications program is not self-sufficient. A mass media system that creates a demand for a non-existent service or commodity is worse than a failure. Therefore, a mass media program must be comprehensive, must assume that the demand will be met, and must work very closely with those providing the commodity or service which is being promoted.

The ultimate goal of a communications program is the creation of long term adoption of a desired practice or use of a product, in this instance, the sustained correct use of ORT. This includes, of course, the follow-up and monitoring of trained service and information providers and the continuation of services.

The essential first step is gathering knowledge, attitudes, and practices information from potential consumers and health providers. From this, messages are developed based on the service/product to be offered. These messages are then tested for their reception among samples of the client population, i.e., whether they are understood or interpreted correctly. Correct use of the message is the goal.

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* Dale Huntington, Academy for Educational Development, Swaziland.

Of utmost importance is interaction among all available channels of communication--that is among the radio messages, those who offer face-to-face information and provide services, and among those who develop the graphics materials.

To be successful there must be consistent messages. They must be repeated both on the radio and face-to-face. Field data must be gathered on the effectiveness of the messages and methods of dissemination, and the messages must be changed to arrive at correct usage of the service or product being offered.

Much communication strategy today is based on so-called "social marketing" which was developed in the last couple of decades. Social marketing means the marketing of a product or service which serves a social good, i.e., smoking cessation campaigns, safe driving campaigns, nutrition campaigns, etc.

Social marketing is based on the concept of the "four Ps," which are "product," "price," "place," and "promotion". The product or service must have the right price and be in the right place before promotion can be effective. This points up the earlier statement that a communications program cannot stand on its own and must in fact work hand-in-hand with the service and product providers, must be part of the market research effort which determines the appropriateness of the product or service and price, and must see to it that the product/service is in place before it is promoted.

This approach is not the only one to be sure, nor might it be the best. However, it is a public communications system that has been shown to be versatile, manageable, and exciting to those who are developing it as well as to those who receive the messages.

Development and Delivery of Messages in the Swaziland Program*

There are some basic questions which it is necessary to ask when launching a mass media campaign. For instance, if radio is to be used, it is of the utmost importance to learn how accessible radios are to the client population. One needs to know if the messages are going to the target group.

The next question is: Are the messages practical enough for people to adopt? You may believe that your messages were inappropriate and/or misunderstood when in fact they were understood, but the means were not available to carry them out. For instance, women may well understand the directions for mixing a sugar-salt rehydration solution, but if sugar and/or salt are not routinely available, the information will be of little use.

In Swaziland one of the first questions asked in the MMHP program was "Does the broadcast reach the target group?" And the next one was "Is it possible for the people to adopt ORT?"

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* Gladys Matsebula, CCCD Coordinator, Swaziland.

In Swaziland a traditional belief is that diarrhea "cleans the bowel." In addition, people tend to depend upon traditional healers for health care. It was also learned part way into the campaign that mothers were confused regarding measurements. In using the "pinch and scoop" method (a three finger pinch of salt and a four finger scoop of sugar in a liter of water), what constituted "pinch" was unclear. As for teaspoons and cups, several different sizes were available in many houses.

Field studies also looked at several messages regarding dehydration in diarrhea, at the availability of the ingredients for homemade ORS, and at foods used during and after diarrhea.

The program itself used drama, story telling, songs with messages, and field recordings to get the message across. The program used mothers to convince other mothers. Radio messages were of varying lengths and varying format--some in the form of stories and some very short spot messages. Some were incorporated into home economics programs. The programs were to last 12 months and the messages were keyed to the seasons--anticipating the onset of the "diarrhea season." In addition extra training was given to rural health workers so that they gave the same messages to the target group as the radio messages.

Demand Creation in The Gambia*

In The Gambia the population of 700,000 is more than 75 percent rural and is scattered in 1,000 villages. Administratively, the country is divided into seven regions. Health services are provided by the Ministry of Health, Labor and Social Welfare, as well as by missions, and private institutions.

Estimates are that over 30 percent of children in The Gambia die before the age of five from diarrhea, malaria, malnutrition, and acute respiratory infections.

The reported cases for diarrhea-related morbidity for outpatients was the following:

1982 - 24,150: 6th place in the list of diseases
1983 - 35,290: 4th place in the list of diseases
1984 - 42,320: 3rd place in the list of diseases

Between 60 and 75 percent of those cases were among children under five years of age. In The Gambia, the Diarrhea Diseases Committee is active, and a diarrhea diseases control policy has been defined.

USAID funded a "Mass Media For Infant Health" project in The Gambia to launch a multi-media campaign to promote home management of diarrhea. The main educational objectives of the three-year campaign are to instruct rural mothers in The Gambia:

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* Presentation by Saihou Omar Dibba, Health Education Unit, Medical and Health Department, The Gambia.

1. To correctly mix a simple sugar and salt rehydration solution, using the formula of three bottles of water (one liter), eight caps sugar, and one cap salt;

2. To administer the solution correctly, and to continue feeding milk and solid foods when their children had an episode of diarrhea;

3. To be able to readily identify signs of dehydration, especially sunken eyes, and to take their children to a health facility at the first signs;

4. To regularly clean feces from the ground of the family compound and to dispose of them in the latrine.

Key elements of the campaign include:

1. Specification of clear objectives;

2. Investigation into existing knowledge, attitudes, and practices (KAP) among target audiences to ensure that objectives and messages are appropriate;

3. A campaign strategy which integrates several media (radio, print, and face-to-face) to achieve objectives;

4. A systematic process of campaign materials development and pretesting to ensure they are accurate, comprehensible, attractive, and culturally appropriate;

5. A system of monitoring and formative evaluation to indicate if and how the campaign elements are working and to suggest necessary corrections.

Phases of the Campaign

After an initial field research exercise in 1981, a development investigation of diarrhea-related beliefs and practices among rural women and health workers, and several months of implementation planning, the Health Education Unit (HEU) launched an intensive educational campaign which consisted of three parts. In Phase One, lasting from April to July 1982, two messages were emphasized. The first was the danger of diarrhea-associated dehydration. The second message was the need to introduce a "special diet for diarrhea," including the use of the sugar-salt solution and the continued feeding of breast milk and solid foods.

During Phase One, 150 rural health workers were trained as well as 650 "red flag women".* Nine radio programs were produced and repeatedly broadcast. Three graphic pieces (150 diarrhea-management posters, 1,500 special-diet for diarrhea posters, and 650 red flags) were also produced and distributed.

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* Red flag women are women in the community who provide information about oral rehydration therapy and dispense ORT packets. They are identifiable by the red flags placed on their homes.

Phase Two messages were the mixing and administration of the solution and the identification of red flag women. About 150,000 mixing flyers were distributed; 29 radio programs were produced and broadcast at the rate of 20 to 30 broadcasts per week; a national physicians seminar on ORT was convened; and a lottery was conducted in which 1,440 mothers in 72 villages competed.

Even though lotteries are not considered good health education tools, one lottery proved quite rewarding. The dramatic rise in the level of knowledge of rehydration solution is attributed mainly to the lottery. The "happy baby" lottery was introduced and advertised during two weeks on the radio and through health personnel. Interested competitors obtained from a designated source an illustration depicting how to mix solutions. Special radio programs continued to interpret messages and explain the procedures of the lottery. The women competing in the lottery brought their mixing illustrations to the lottery. Prizes awarded included radio sets, cups, and soap.

In Phase Three, instruction dealt with the special danger of dry season diarrhea (the rotavirus diarrhea) and the prevention of diarrhea through prompt clean-up and disposal of feces. Among the activities initiated during this phase were the production and broadcast of 14 new radio programs on dry season diarrhea and the importance of feces disposal and a mid-campaign formative evaluation.

The messages emphasized in Phase Four were the proper feeding of a child with diarrhea during the rainy season, the time of chronic diarrhea and malnutrition, and the reinforcement of key oral rehydration messages. Phase four activities included the development of rainy season diarrhea feeding messages, the retraining of 60 rural health staff, the production and distribution of two new graphic pieces (100 feeding posters for health workers and 50,000 feeding flyers for mothers), and the production and broadcast of eight new radio programs.

In Phase Five, which lasted eight months, attention was paid to encouraging the knowledge and use of the ORT solution, to repeating dry season diarrhea messages, and to preventing diarrhea through the protection of wells and washing hands with soap. Specific activities were a formative evaluation of rainy season feeding messages and the planning and implementation of an institutionalization process whereby campaign elements and strategies were to be absorbed into other health education activities of the department. In addition, 13 new radio programs were produced and repeatedly broadcast. Forty-five rural health care workers were trained at three regional workshops, and 1,000 posters/teaching aids on washing hands with soap were produced and distributed among health workers including community health workers.

Throughout all phases of the program, the supervision and monitoring of radio messages, personnel, and the status of print materials in the field was intensive and on-going. The development of print materials involved trips to neighboring Dakar, and each media channel and key message was pretested. In addition, a diarrhea disease control manual was developed.

Evaluation Results, and Observations

An independent evaluation was conducted by the Institute of Communication Research at Stanford University, to measure the effects of the campaign on people's behavior and the effects of any behavioral change on health status. The evaluation was based on the philosophy that target audiences must have access to channels, must be exposed to messages, must learn the information or skill being taught, must change behavior and must maintain the new behavior in order for changes in health status to occur.

It was recognized that the usefulness of print materials was limited by the low literacy level, but carefully designed materials appeared to have a significant impact. The penetration of radio was high. There were working radios in 59 percent of the compounds, and batteries to operate them could be purchased locally in 90 percent of the cases. Radio Gambia was overwhelmingly the station chosen most frequently; 68 percent named it as their first choice.

The evaluation also elicited the fact that client interaction with health workers was high. Eighty-five percent of the mothers said they had gone to a clinic for their child's last case of diarrhea.

In the second year of the campaign, mothers could recognize some signs of dehydration: sunken eyes and sudden weight loss were recognized by 81 percent and 71 percent respectively. Between the 9th and 13th month of the campaign, the incorrect belief that the sugar-salt solution stopped diarrhea fell from 82 percent to 44 percent, while the correct belief that it prevented dehydration rose from 4 percent to 26 percent. In general, the concept of dehydration seemed difficult to grasp. Six months into the campaign, 52 percent of the mothers did not believe that dehydration could result from diarrhea. The percentage of mothers who continued other foods during bouts of diarrhea started at 60 percent at the beginning of the campaign and then increased significantly, and it now remains at a level between 80 percent and 90 percent.

On the less encouraging side, while some concepts of environmental sanitation were well accepted, after almost a year into the campaign, 77 percent of mothers still thought it was harmless to leave children's feces on the ground in a remote part of the compound and 55 percent thought flies could not transmit diseases.

Teaching about mixing and administering the sugar-salt solution was and continued to be the primary educational objective of the program. The most dramatic impact of the program is reflected in the fact that the percentage of mothers who heard of the homemade sugar-salt solution rose from 52 percent in the early months of the campaign to 84 percent within a year, and a measure of correct mixing knowledge, requiring mothers to be correct on all aspects of mixing, rose from zero in the first month to 67 percent within nine months. Nine months after the campaign started, 47 percent of mothers had treated at least one case of diarrhea among their children with the sugar-salt solution; at the start of the campaign, they took their children to health centers for their most recent case of diarrhea.

Toward the end of the second year of the campaign, a control group of 225 women from eight villages was surveyed in order to validate the results observed among the regular panel of 800 mothers. Without performing statistical tests of differences between the control group and the regular sample, it was found that among the control group high exposure to the campaign, knowledge of the sugar-salt solution and its administration, and beliefs and misconceptions were similar to those in the sample group. By the beginning of the third year, it was observed that two-thirds of mothers knew about the sugar-salt solution. At least two-thirds of these mothers knew the quantity of water, sugar, and salt to be used. Of these mothers who knew about the rehydration solution, nine in ten were aware that it should be given at the first sign of diarrhea. Nine out of ten respondents said that there was a red flag woman in their village, and three-fifths knew what these red flag women did.

Another key campaign message, the continuation of solid foods during a bout of diarrhea, was not well accepted or learned by women. The majority of mothers still believed feeding solid foods during diarrhea was not appropriate.

Training for Communications and Delivery of ORT Services in Swaziland*

It cannot be stressed enough that each element of a health delivery campaign must complement the other elements. Each element depends upon the other and upon the unique capacity of each individual working in the program.

This means that not only must the messages be the same whether transmitted by radio, printed flyers, or health workers, but that all of the individuals in the program from media persons to mothers and from physicians to traditional practitioners must be trained. They must be trained in cause and effect in relation to diarrhea and its treatment, and, depending upon their role, they must be trained to perform their functions within the global ORT scheme whether it be creating the demand or delivering services.

In Swaziland training consisted of four tracks:

Track I: Those with experience in health in rural areas and in industry were given basic knowledge of health systems and two days of training in ORT.

Track II: Rural health motivators and traditional practitioners were given a one-day workshop and taught basic ORT training methods so they in turn could train mothers.

Track III: Health professionals, including physicians, matrons, sisters, clinic nurses and supervisors were trained in ORT.

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* Discussion by Ms. Pitnera Mthembu, Director of the Health Education Unit, Ministry of Health, Swaziland.

Track IV: "Yellow flag volunteers"--those who would have a yellow flag in front of their house signaling their special expertise in ORT--were trained using locally available resources and handbills.

This training was started in September 1984 and was to finish in April 1985 by which time a core of 412 people would have been trained with an anticipated outreach of almost 2,000 more who would have been trained in turn by this core.

Summary of Section

Questions were raised from the floor with regard to testing messages. It was explained that in The Gambia, messages were developed in the office. The message was determined by what had been found during the survey in the communities. The message was made as simple as possible and a prototype of the flyer was produced and given to the health worker who went out into the compounds. He or she was given a number of compounds to cover during the day. The health worker showed the women this handbill and asked what they saw in it. The women responded with different stories. However, a target had been set. If five or more women were able to interpret accurately what was in the picture, it came back to the office and was modified until seven out of ten interpreted the messages accurately.

The message is as important as the trainer that conveys the message. So it is necessary to do two things--prepare flyers and train health workers during a day or half day in interview techniques and the use of printed materials.

Stanford University carried out an evaluation of this program, and they have assisted in the pre-testing of messages because of the importance of this phase of message development. If the training and the message are not appropriate, there will not be a significant impact on the level of knowledge or practice. Health workers do the pre-testing of the message and have the training. Radio messages are tested the same way. A cassette recording and a tape recorder are given to a health worker. She goes into the compounds, brings the women together, and they listen to it. The programs range between

This pretesting of messages is a key to successful communications programs.

V. MANAGEMENT OF PROGRAMS

The Importance of A Plan*

In the celebrating moments of the declaration of the eradication of smallpox from the face of the earth, a member of the press addressed a question to Dr. Halfdan Mahler, Director-General of WHO, asking what is the next problem to eradicate for the well-being of mankind on earth? Dr. D. A. Henderson grabbed the microphone and said "bad management."

One of the things that should be addressed in all ORT or CDD programs is the problem of management. There has been some discussion as to whether or not an ORT program should stand alone or be integrated with other programs--whether it is simply itself just one of the many activities in primary health care. There is almost uniform agreement that an ORT effort in any program must be planned. It cannot be ad hoc. The provisions of a few ORS packets or a poster advertising an appropriate method of making ORS is not a diarrheal disease control program and cannot be expected to get desired results. A well developed plan is one of the most critical elements of a successful program, and although people are very glib about plans and how easy it is to put together many pages of paper, the process of planning is one of the critical steps which should be taken, even if a major effort in ORT already exists. The development of a comprehensive plan for ORT will involve groups of people who have never been involved in the planning of health services before, and that involvement in and of itself will gain their commitment to the program in a way that no other activity can.

A few points are worth mentioning here. First, a plan must be comprehensive. It really has to include everybody who will be involved in the ORT program. Thus, it must involve administrators and administrative systems; the people who are going to help establish the budget, are going to manage the money, are going to release or not release the money in a timely way for seminars or for the purchase of necessary materials, for the printed materials, for the supervision visits, for the gasoline, etc.

Secondly, the plan has to address all levels of the technical system. The plan should be a document which contains such mundane things as job descriptions at various levels, i.e., who is expected to do what. If this plan is carefully made, everybody in the system will be able to have a copy of it on their desks and feel that they know what they are expected to do as well as what everybody else in the system is expected to do. This can extend beyond the health system. The most successful ORT programs in the world have been remarkable in reaching out beyond the confines of the health sector to mobilize others. That can be said for everything in health. Health professionals always talk about mobilizing the other sectors. Why can ORT programs do this any easier or better than the others? The answer seems to be that if attempts are made to communicate with other sectors to find out what jobs

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* Presentation by Jon Rohde, Management Sciences for Health.

they are trying to get done and if ORT services and programs are adapted to their systems within their context, these sectors will cooperate.*

If there is a "training and visit" agricultural extension system in a country, and there are many now, one of the lessons could be reaching the fathers through that kind of forum. For instance, once ORS packets are available, they could be given to every farmer.

If a plan is appropriately developed and spells out in detail what is expected of everybody involved in making the plan and they know what they are expected to do, it is quite possible to put a calendar on the wall which will say who is going to do what and when. This is a very good investment to make, not just for the central office but for the office of everybody who is involved. So that, for instance, everybody once again is alerted that the poster is being developed in the health education department, that they can expect to see the first trial run of it by June, that they are going to revise it between June and August, that it's going to the printer in September, and that they can expect to get the 200,000 copies out by November. Other people can see what is coming out of the program with such a calendar of events.

And finally, the most important part of a plan is that it is being used on a regular basis to monitor what is going forward. It is a management tool. A plan is not simply a document to free up a check from the donor or from the finance ministry, although it often is used as such. So often a plan is made, everything spelled out, money is out in the bank, the plan is put in the drawer, and one goes on about one's work. A properly made plan

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* For instance, school teachers are everywhere thought to be a wonderful, village based, government functionary. They are going to promote loans for small business; they are going to promote women's activities; they are going to promote the adoption of new agriculture; they are going to be nutrition people; they are going to do everybody's program. Rather than seeing such added duties as a burden, teachers might be more inclined to cooperate with such efforts if their jobs were made easier for them.

For instance, in Indonesia, a set of five lessons was developed using the science curriculum format for primary schools and showing how ORT could be used to teach science. This does not mean cyclates and intercellular calcium pathways but more about the need of an animal for water and nutrients. The materials were used to talk about numbers and measuring--liters, 750 ml, common volumes--things that children in a classroom want to learn or should want to learn. It was put into the ORT context. Instead of asking the teachers to pick up a WHO manual and somehow figure out what to teach, lesson plans were made for the teacher to use at, say, a fourth grade level and another one at the sixth grade level. These modules gave ten test questions at the end of each class so the teacher did not even have to figure out what to put on the examination. The children were given homework--to go home and find out what words were used regarding "diarrhea" and what their parents thought about it. Another day they were supposed to teach their parents and one neighbor how to make a "pinch and scoop" solution and so forth.

is a tool that should be used on a regular basis, and should be reviewed every three months or so at a meeting by all those people who were involved in making the plan.

One day in three months is probably not too much to ask for regional directors to come to a headquarters meeting. You are not going to be able to take stock every three months of how many cases of diarrhea there have been, or perhaps how many lives have been saved, or perhaps even how many cases treated, but they will be able to look at their calendar, readjust their schedule and have some interaction with their colleagues, and they will get a sense that they are moving forward. And everybody who is involved in the program will be moving with them. By being expected to present their own progress once in three months at a gathering of program staff, momentum can be generated for a well-managed program. The plan, its periodic re-assessment, and the involvement of as many people as possible in this are critical.

There is a national program manager. While an ORT program is undoubtedly a part, an integrated part, of a primary health care program, and does not stand alone, there has got to be someone in each country who does nothing but think about diarrheal disease control, a person whose job it is to see that ORT goes forward, to call the meetings, to get the papers prepared, to assess where the plan is moving. The designation of a national program manager for ORT is the critical indicator of progress and WHO has found it a most useful one to decide when a program has moved from the planning stage to a really operational program.

Program Management in the Sahel*

In the Sahel, until recently, each country had little more than a "plan to combat diarrheal diseases." These plans were generally global, and did not specify in detail the activities which would be carried out nor who would do what. But they were plans. They were an indication of political will. People were clearly interested in doing something, but there was something missing. Things were not progressing. There was a need to analyze the obstacles to progress.

Coordination at the National Level

One of the most notable obstacles was the problem of coordination at the national level. Often it was not clear who was in charge of developing the detailed plan and "energizing" the program. Several options have been tried for coordinating the activities at the national level. In one country two coordinators were nominated. Although there was some progress and a fairly detailed plan was prepared, problems soon developed.

Sometimes a coordinator is nominated but he/she does not work full time on ORT (e.g. the Head of the Health Education Division or the Family Health Division). Experience has shown that this is not entirely functional because

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* Presentation (translated from French) by Suzanne Prysor-Jones, Sahel Regional Coordinator, PRITECH.

such people are very busy, they have many other things to do, many responsibilities, and many pressures. Because they have to spread themselves thin, the program suffers.

Mali is an example of a Ministry of Health that recognized the need for a full-time Program Coordinator. Various plans and documents had been written but the program stagnated for several years. Finally, a consensus developed that the absence of a full-time coordinator was inhibiting the transition to the program implementation stage. And, indeed, the program has now made a great leap forward.

Many of the things that a coordinator must do constitute the basis of any program. For example, in one of the ORT workshops, a participant stated:

> "Yes, we are having problems getting started because we do not have a clear policy. There are several options regarding whether or not we are going to use the ORS packets, at what level, whether we will discuss the sugar-water solution, or something else, how we will train people, how we will organize the program at the periphery."

In other words, there were many unresolved questions.

A coordinator has a very important role to play even if he (or she) is not the one who decides. He can "prepare" options for decision-makers. Working in collaboration with his committee, if he has one, bringing together informally people from various divisions of the ministry and from other sectors, it is possible for him to think through and present the various alternatives and their implications. Then, people have a basis on which to decide what they wish to do and how to do it.

Thus, the essential functions that a coordinator must assume range from program design and fund-raising to detailed work plans and the orientation and supervision of regional teams.

Regional Level Responsibility

A national plan, national program norms, and some stimulating energy from the national level are necessary for a national program, but it is the regional people who will implement the program. So, if a country has 15 regions, there will be 15 ORT programs. This does not mean the central level is not important. On the contrary, it must provide the backbone for a strong program. Especially, if you have regions which are very different, it is of major importance to have clear program norms and instructions for health workers. For instance, direction is needed to develop a work plan at each level. It is easy to say you need a workplan, but you also need to know how to go about it. What are the components of the plan? What is the process by which such a plan is to be developed? The central level cannot prepare the workplan for a region, but it can specify the process which is to be followed and help the regional personnel to ensure that a good plan is developed.

It can be very useful to have a person responsible for the program in each region, even if this person does not work work full time on the project. There is a danger, however, that when there is a regional coordinator, people

think that any problem with the program is his problem, that the program is his responsibility alone. This is not how a regional coordinator should be perceived. At the regional level, it is the responsibility of the regional team to manage the program, to train the trainers. It is not the role of a single person. However, from the program management point of view, it is useful to have one person with whom the central-level coordinator can always interact, who follows up on certain activities, who can ensure that data are collected. He does not collect data himself, but he makes sure that it is done; he is here to jostle the heads of the health centers and of the dispensaries. He makes sure that there is a follow-up. This is a point which deserves reflection.

It is often considered necessary to have a multisectoral coordinating committee, not only at the national level, but also at the local level, where local problems and situations can be discussed with all those who should be involved. Sometimes the ministry of health itself is not very integrated. There are vertical programs, separate divisional activities, etc. Coordinating with other sectors is also difficult. In some instances, a diarrhea program can become the focal point for coordination, a forum, a place where practical activities can be carried out and discussed for each region. In the majority of African countries, the regions are very diverse, and it is not possible to have a national policy which is appropriate for all regions. This makes the participation of local decision-makers particularly important. Since ORT programs involve easily-defined, specific activities for each level of personnel and each sector, they can generate significant advances in effective multisectoral cooperation.

Vertical vs. Integrated Programs

This leads to the problem of "vertical" and "non-vertical" diarrheal disease programs. Recently, in Niger, there has been much discussion with regard to this subject. People are very afraid of vertical programs because in the past they have seen programs developed completely independently, and it was very difficult to integrate them afterwards with, for example, primary health care programs that were being established. It must be emphasized that diarrheal disease programs should not be vertical programs. Rather, each national program should "infiltrate" the existing infrastructure which will carry out specific program activities, but it is not a vertical effort in the sense of having its own separate personnel and an independent management system. For those who are in favor of primary health care (PHC), a coherent national ORT program can be a good thing. Primary health care critics feel that PHC is a diffuse concept. Its impact is difficult to observe. They ask, do these village health workers have too many diffuse tasks to carry out so that it is difficult to see exactly what they do. I believe that an ORT program which provides a focus for activities, defining specific, limited tasks for a worker to carry out, can strengthen a PHC program because it allows village health workers to perform work which will have an observable impact.

Although an ORT program should not be vertical but rather reinforce existing programs, there are many special activities which must take place if the program is to function. Many of these activities will be specific to the program, but can later be used as a model for other systematic attempts

to deal with priority health problems. One needs a detailed plan which is not, at the initial stages, integrated with other programs. It will usually be necessary to develop special educational materials, mass media programs, and health education activities at all levels. This also requires a separate campaign-type effort. Data collection for program follow-up also requires special attention. In Niger, for instance, the diarrheal disease program had identified seven indicators that they wished to use in order to assess how the program is working. As the Ministry information system was being revised, there was some opposition to having separate forms for this program because it would be too burdensome for nurses to fill them out at the dispensary level. This is a valid point. However, it takes a long time to establish a management information system which will be able to provide efficiently information on key indicators for each of the priority programs. Sometimes, it is not possible to wait for such a system, and some information needs to be collected separately, with the intention of integrating this data collection system into the general system at an appropriate time. Thus, one must try to maintain a delicate balance between program-specific activities and the integration of these activities in the health system as a whole.

Sequence of Activities

The order in which activities take place also creates some problems, especially now in the Sahel, where there is a state of emergency--the drought and cholera. It would be desirable to launch ORS packets immediately and solve the grave problems existing at the periphery. However, at present, there is some frustration because it is not really possible to do this. For example, in Mali, many ORS packets arrived and were distributed to the regions. However, these packets were not being used, because although the health workers had received some information regarding ORT, few of them knew very well how to use it, and there had been no systematic approach to training yet since the national program had not really started.

As many people have mentioned, it is necessary to inform and to train health professionals before educating the people and training periphery health workers. Shortcuts cannot be taken. Of course, one cannot wait until all the health professionals are trained, before starting other activities. In each country, the proportion which must be trained before other activities are started will be different, but it is necessary to have a "critical mass" of ORT trained health professionals before launching a mass media program and providing packets on a widespread basis.

Often, when a mass media campaign is planned, there is concern because there is no assurance that packet distribution will coincide with this campaign. This is a very important point. There is nothing worse than to create a need and not to have the means to meet this need when it is created. This is a problem of management of essential drugs and planning a system to make them available at periphery level.

Evaluation indicators must also be well defined at the start so that the regional personnel know how they will be evaluated and what criteria will be used. This should help them to understand well the role of the regions in a national program. This may seem obvious, but it often has been overlooked.

Some Lessons from Program Management in Haiti

In Haiti, at the beginning of the program, there was not enough time spent in the regions. Intentions were good, but there was no time to go to each region and work on the details of the regional programs. It was assumed that regional people were professionals. There were public health doctors in each region. Therefore, they would manage--they only needed a few general orientations. It was a very wrong assumption. Later, it took more time to go to each region to try to solve these problems that arose and make things more harmonious. In retrospect, it was regretted that regional personnel were not included sufficiently in the planning stages. In a program budget, this is often an item which is left out. The costs of planning and follow-up visits by central personnel to each region are often underestimated.

There were some other surprises in Haiti. For instance, educational materials were developed, and a first shipment of leaflets were sent to the regions with written instructions for their use. The same thing was done for posters and health education booklets. Regional personnel were not used to having much educational material. They felt that if they used what they had, they would not get any more. Therefore, they kept the material sent to them instead of distributing it widely as intended by the personnel at the central level.

Packet management was another area where there were problems in Haiti. Packet management, of course, depends on general policy concerning essential drugs. The packets constitute a problem in themselves with respect to their transportation, storage, and other difficulties which need to be discussed with the person in charge of each region in order to avoid later difficulties. Here again, lack of sufficient planning with the regions at the start of the program caused problems.

Funds management is another important issue. There are often many donors which contribute to the diarrheal disease program. Each donor has a tendency to have its own rules and requirements, with different presentations of receipts to justify expenses. Regional staff did not always fully understand the requirements of each. The program was impeded because receipts were not prepared in accordance with the regulations. Regional workers were not sufficiently informed of those regulations from the start. As a result, subsequent payments were delayed because of non-compliance. These delays can create many problems. It is, therefore, better to study funds management very carefully, especially at the peripheral level, with the persons in charge <u>before</u> embarking on decentralized activities.

Dealing with Regional Diversity

Several conference participants have mentioned that it is difficult to have a national policy in African countries because of the ethnic, climatic, and environmental differences which exist within one country. This is a very important point. These differences, in fact, increase the need for planning rather than reducing it. They make even more essential the need for a national team, which has a global vision of the program, to visit each region to work with the regional staff and to identify methods to adapt national policy. This is particularly important for reaching mothers in countries where there

is no uniform PHC infrastructure. There may be some small projects here and there; the private sector may be doing something; there may be pilot projects; sometimes literacy projects, etc. It is easy to say at the central level that this will be done or that, but in the field, it is not that easy. Health workers do not have the same resources throughout the country. Sometimes it is easy to supervise village level workers because there are vehicles and fuel. Sometimes resources are simply not available to do this. Sometimes the literacy sector wants to help, and they have field workers who can assume some responsibilities. Then again, sometimes this is not possible. Thus, it is necessary to be very flexible at the peripheral level. This does not mean that there is no need for definition. On the contrary, it requires greater concentration and planning efforts at all levels.

VI. MONITORING AND EVALUATION*

The basic assumption of the World Health Organization's (WHO) recommendations on the evaluation of diarrheal disease control programs is that the selection of indicators depends on the objectives, targets, and desired activity outputs of the particular program to be evaluated. In other words, before the progress of one's journey can be usefully measured, it is necessary to know where one is going, which roads to take, and which intermediate stops to make, and it will have to be decided how the vehicle will be equipped and who the fellow passengers will be.

In most developing countries, and particularly in Africa, diarrheal diseases are a major contributor to childhood mortality, and thus the objective of most programs is the reduction of diarrheal mortality. The single most important means of achieving such reduction is through the proper management of cases. Proper case management includes at least three elements:

1. Use of home-available oral rehydration solutions at the onset of diarrhea to prevent dehydration;

2. Use of ORS to treat dehydration; and

3. Continued feeding of the child during and after diarrhea.

In well-designed programs, the program targets are the indicators of the extent to which proper case management is carried out, with specific targets or sub-targets often expressed in terms of access to and use of oral rehydration therapy.

To achieve such targets, a number of activities need to be implemented, all of which have some particular output. WHO has suggested that the following are particularly critical activities:

1. Development of a well-formulated plan of operations, including measurable goals, assignment of responsibilities to management staff with the time and interest to tend to the program, a schedule of steps to be implemented, a plan for monitoring, and a budget;

2. Training of health staff and other providers, such as pharmacists and traditional providers of health care;

3. Education and motivation of families to provide home solutions, to continue feeding, and to seek additional care if the child does not improve;

4. Adequate logistics systems for providing ORS;

5. Continuous monitoring and supervision;

6. Periodic formal evaluation or what WHO has called program reviews.

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* Presentation by Robert Hogan, World Health Organization.

If all of these activities are carried out in full, diarrhea cases will be properly managed by both families and providers of care. If cases are properly managed, diarrhea mortality will decrease.

In order to monitor and evaluate a program, it is critical to understand the relationship between the activities and targets of the program and the improvements in health status. In program evaluation, WHO recommends moving up the causal chain from activities to objectives. If a negative result is obtained at lower levels, there is no need to move to the next level. If ORS is not available, there is no need to measure its use. If ORS is not being used, there is no reason to expect, or to measure, changes in mortality. A striking example of this has been evident recently with regarded to cholera, where elegant and simple studies at the U.S. Centers for Disease Control (CDC) showed that cases of cholera in one country were being improperly treated. Proposed investigations into the possible existence of particularly virulent strains of the vibrio were not needed to explain the consistently high case fatality rates.

The purpose of monitoring and evaluating activities is to determine, first, whether the activities are being carried out and, second, whether they are being carried out to the extent required. This distinction is important, since there is a tendency to emphasize that which is easiest and appears to be more scientific, that is to stress quantitative rather than qualitative data gathering. Counting is easier than looking or seeing. The most important form of monitoring, however, is the observation of performance during a routine supervisory visit. Training of health providers is a good example. The number of training courses can be counted as well as people trained, and people needing training, and it is certainly important to do so. In addition, it is important to monitor the preparation of the training materials and to observe the actual training taking place to see whether it is done correctly. Do workers, for instance, have a chance to practice the skills they are taught? Finally, it is essential to observe performance after the training is completed to see whether workers are actually using the training they have received.

It is impressive that staff who have worked in the field of social marketing are particularly aware of the need for qualitative performance monitoring. The success of programs in Egypt, Haiti, and Honduras suggests the value of this approach.

Measurement of the extent of achievement is, of course, also important. The following are examples of potentially useful quantitative indicators: the number of packets of ORS produced and/or imported compared with childhood cases of diarrheal dehydration, the number of program managers and supervisors trained compared with total staff in these categories, the number of peripheral level staff trained, including pharmacists and traditional care providers, compared with total staff to be trained, the proportion of mothers receiving messages on home solutions and continued feeding, and the number of supervisory visits performed compared with the number planned.

Next, one needs to look at the targets, that is to measure the extent to which some level of activity, carried out correctly, is producing the desired

effect. Are planning, training, use of the media, and so forth leading to high levels of correct case management? Here the combination of numbers and observation is particularly important. As quantitative measures, the following are possible critical indicators: the proportion of cases with access to ORS, the proportion of mothers capable of preparing home solutions, the use of ORS and home solutions, the extent of knowledge and practice of continued feeding, the proportion of cases not responding to home solutions referred for ORS, and the reduction in hospital admissions following introduction of a policy on the use of ORS.

On the qualitative side, observation of the performance of those who manage diarrhea cases is perhaps the most critical and neglected aspect of ORT monitoring and evaluation today. Access to ORS is increasing dramatically, thanks primarily to increases in local production and, secondarily, to increasing provision of packets by UNICEF and other donors. The WHO Control of Diarrheal Disease (CDD) management information system indicates that global access to ORS in 1983 was at least 22 percent compared with the negligible global access which existed even four or five years ago. Use of ORS is also increasing, and global use in 1983 was at least four percent. Evidence from a number of countries, however, suggests that effective use, that is, sufficient volumes of properly prepared ORS given over a sufficient period, may be inadequate. Monitoring the administration of ORS by care providers and home solutions administered by mothers is the most important means of identifying and correcting this problem.

The importance of routine supervisory visits has been stressed in monitoring both activities and targets. Supervisory checklists have proved a particularly useful tool in carrying out this critical activity. Examples of such lists are included in the WHO/CDD Supervisory Skills training course.

The next area to consider is that of objectives. Is the correct management of cases resulting in changes in health status and, in particular, in decreases in diarrhea mortality? The measurement of changes in overall childhood mortality and diarrhea-specific mortality is currently being given well-deserved attention by USAID, CDC, WHO, and others. Final answers on the most reliable and useful methods of measurement are not yet available. One measurement tool, the WHO/CDD survey methodology, has been tested about 90 times, including several times in Africa, and the mortality rates have been epidemiologically plausible. The primary objective use of this survey is to measure diarrhea incidence and the use of ORT, but the survey can also be used to measure diarrhea-associated mortality. Further examination of this methodology and, of course, survey methods relying on retrospective data obtained from mothers is currently underway.

Alternative means of measuring changes in mortality include interpretation of health facility data in those areas where these data can be shown to be either representative or consistently indicative of trends. In Thailand, for example, officials claim to have good evidence that nearly all diarrhea deaths occur in hospitals, and thus recent dramatic reductions in hospital diarrhea deaths can be taken as reductions in actual mortality.

Another alternative is to carry out research on the epidemiology of diarrheal mortality in order to solidify, for particular countries, estimates of the theoretical relationship between effective treatment and prevention of death.

On the whole, it may be that, as far as diarrhea is concerned, too much attention is being paid to these ultimate evaluation questions. In the large majority of countries, particularly in Africa, activities have not yet reached a level where "effective use" of ORT is such that changes in mortality can be expected. It must be best to concentrate at the present time on these process assessments, while giving attention to research into mortality measurement issues.

In summary, Table 1, below, describes the data that should be collected in monitoring and evaluating diarrhea control programs, and suggests six methods for obtaining this information. This scheme distinguishes assessment of activities, targets, and objectives. The best method for measuring each indicator has not been presented, leaving each country to decide, on the strength of its own data collection systems, which methods are most appropriate.

In summary, areas which deserve priority attention at the present time include:

1. Supervisory visits to observe the use of oral therapy by providers and families;

2. Higher-level supervisory visits to reinforce the importance of mid-level supervision;

3. Formal program reviews, involving national staff, staff from neighboring countries, and some international staff, to assess overall program status, and to assist in replanning;

4. Community surveys to measure trends in the use of ORS and home solutions.

It should be noted that only part of these four areas involves outside staff. International agencies hold in high esteem their own roles in international health. In fact, the success and, should it come to that, the failure of health programs, particularly relatively cost-effective programs like oral rehydration, are the responsibility of the countries themselves. One of the key questions to be examined over the next few years is whether the developing countries, assisted occasionally by the international community, will be committed to the use of critical observation in the areas of monitoring and supervision. The capability of developing countries, particularly those in Africa, to achieve dramatic change relying almost entirely on national resources was clearly demonstrated during the smallpox eradication program and more recently, in some countries, with the Expanded Program on Immunization. When will there be a similar success with oral rehydration?

TABLE 1: CDD INDICATORS AND METHODS

INDICATORS	METHOD					
	Routine Surveillance	Supervisory Visits	Special Program Reporting Systems	Formal Program Reviews	Community Surveys	Research Studies
A. ACTIVITIES						
1. Local plans						
2. National plans						
3. Availability of ORS						
(a) Local production						
(b) Importation						
(c) Distribution						
4. Training						
(a) Senior managers						
(b) Supervisors						
(c) Delivery level						
(d) Non-governmental						
5. Family education						
(a) Health education						
(b) Social marketing						
6. Supervision						
7. Evaluaton						
B. TARGETS						
1. Access to ORS						
2. Knowledge of home solutions						
3. Use of ORS						
4. Use of home solutions						
5. Effectiveness of use						
6. Continued feeding						
7. Correct referral						
8. Changes in hospital admissions						
C. HEALTH STATUS (OBJECTIVES)						
1. Mortality						
2. Severity of dehydration						

VII. HOW TO MOBILIZE RESOURCES

Access to AID Services*

The United States, through the Agency for International Development (AID) has given a very high priority to oral rehydration therapy in its health program. In 1984, AID spent approximately $18.6 million on oral rehydration therapy activities of one kind or another. That is directly attributable to ORT, and this year, 1985, that figure will rise to $38 million. The vast majority of health funds are distributed to the AID missions where they develop and fund projects. Many of those projects in the next few years will be for oral rehydration therapy.

The programs of the AID missions are complemented by central office programs of the AID Office of Health in Washington. These central activities include a number of ORT projects. The advantage from the perspective of central projects, that is projects funded by the Office of Health in Washington, is that they are very flexible and able to respond very rapidly to requests. Basically, funds are available through contracts (usually with private organizations, universities, consulting firms, and other organizations) to provide technical experts or consultants, to pay for training, or for any number of other activities.

Although the absolute amount of money available for centrally funded projects is less than that available for mission projects, access to services through centrally funded projects is often more rapid and more flexible. They both have their advantages. There is usually a health officer in an AID mission, and if there is not an actual health professional on the AID staff, there will be someone who is designated to coordinate health activities. This person is available to help host government officials and others gain access to both centrally funded services as well as local AID projects. The AID mission in any country will coordinate all activities including those in Washington. Such activities are not limited to countries that have AID missions. Where there is no AID mission, the U.S. Embassy will have someone that is designated as the AID representative and that person can provide the same services as health officers in the AID mission. The Embassy will contact AID/Washington quickly. It should be emphasized then that there is a distinction between Washington-based projects and mission-based projects, and the main difference is often in flexibility and in speed.

Virtually every year AID develops new activities, new forms of assistance, whether they be technical assistance, training, or other types of assistance. AID really is interested in knowing what needs exist because it would like to develop activities that are useful.

A number of projects that are sponsored by the Washington Office of Health deal with larger health issues in primary health care. And of course a number of these projects are relevant to developing ORT programs. The Primary Health Care Operations Research Project (PRICOR) is one. This proj-

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* Presentation by James Heiby, Office of Health, U.S. Agency for International Development.

ect provides field study services to support any number of health activities. This year, AID will be developing a new operations research project that should be available this fall.

AID plans to develop a project that will provide assistance in social marketing, and it is hoped that there will be a new project this year with the Johns Hopkins Institute for International Programs which will provide practical assistance in developing primary health care programs. Another new project will provide assistance for improving immunization programs and for analysis and will hopefully remedy financing problems. At this time, the Office of Health is also supporting research in diarrheal diseases through WHO and other institutions. In summary, there is a variety of resources and assistance available both through the Office of Health in Washington and through local AID missions.

Additional AID Resources for Health*

The resources for ORT have dramatically increased over the last several years. There was nearly a doubling worldwide. It is estimated that in 1985, approximately $5.6 million will have been spent on ORT by AID in Africa alone. So there are many resources that AID is putting into oral rehydration therapy. How does that translate into programs? Some of the centrally funded ORT projects have been mentioned above. There are several additional activities worth mentioning.

The first one is a joint worldwide program with the Peace Corps, specifically in oral rehydration therapy. The program supports in-country training in nine countries and training materials are being developed for use at the village and community level. These training materials will be distributed to countries in Africa.

A second project is the Mass Media and Health Practices Project (MMHP) which has been active in Swaziland and The Gambia. This project brings together a wealth of experience in communications and has developed extensive materials which are available to health professionals and the general public. Consultants from the MMHP project are also available for assistance in the use of mass media and communications. AID is exploring new training opportunities, such as meetings and seminars to disseminate the information and methodology which has been developed within the MMHP project. AID will also be conducting new studies that examine the issue of institutionalizing communications activities.

The Offices of Health and Nutrition in The Science and Technology Bureau are looking at ways to strengthen the link between nutrition and diarrhea. A project is being developed which will support nutritional and diarrheal research including feeding practices and local food distribution practices.

There is a new program called the Child Survival Action Program, for which the U.S. Congress has appropriated $85 million to AID primarily for the

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* Presentation by Robert Clay, Office of Health, U.S. Agency for International Development.

support of ORT, immunization, and infant and child nutrition programs. Specifically, in Africa, it is anticipated that approximately $6 million will be available for new bilateral programs, and also $15.8 million for use by voluntary organizations to support these interventions in Africa. Support is also being funneled through UNICEF to Nigeria and Sudan. These new resources provide a unique opportunity to follow through on some of the ideas discussed at this workshop.

AID also has a computerized data base on activities in oral rehydration therapy in the AID assisted countries which includes information on supplies of packets and salts, the obligation and resources available, and types of training, etc. that are being conducted in the various regions. The AID Office of Health is also providing support for the newsletter "Diarrhea Dialogue" published in London and has published the ICORT Proceedings.

Finally, the AID Office of Health has been involved with these workshops and with preparations for the second International Conference on Oral Rehydration Therapy (ICORT II). This conference will be held in Washington December 10-13, 1985. Extensive discussions and information exchange on ORT implementation issues are planned, including some of the problems that have been raised here. Information and issues regarding ORT program implementation in Africa would be welcome for inclusion in the agenda. The Conference is expected to be attended by over 700 people from 85 countries. The proceedings from ICORT II will be available from the AID Science and Technology Bureau, Office of Health for those who are interested.

The PRITECH Project*

The purpose of the PRITECH project is to promote an expansion of the effective use of proven primary health care technologies, particularly ORT. PRITECH is funded by a contract from the central Office of Health in Washington. PRITECH has been asked by AID to concentrate program efforts in Africa. PRITECH's interest and expertise in ORT is very comprehensive. PRITECH has technical expertise and interest in public sector national ORT programs, ORT policy issues, private sector ORT programs, social marketing, commercial distribution of ORS, manufacturing, public eduction, ORT methodology development, training, management, logistics, and financing. PRITECH is also able to work with all interested people--governments, the private sector, private and voluntary organizations, and other donors. PRITECH has access to expertise that are not only in its own group (composed of Management Sciences for Health, the Academy for Educational Development, and Johns Hopkins University), but can also recruit worldwide the experts it needs on a short term basis. This includes both American and non-U.S. international consultants.

PRITECH is not, as Americans call it, a "big-bucks" project. Its strengths are as a strong ORT technical resource and as a catalyst that can attract other resources. PRITECH helps analyze local conditions and possibilities for starting, expanding or improving ORT programs; helps to develop strategies and plans for ORT: helps countries develop proposals of the quality required for consideration for international financing; and provides some

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* Presentation by John Alden, Director, The PRITECH Project.

start-up assistance for major new ORT programs that can bridge the gap between project development and the availability of resources, plus some limited funding for small scale priority ORT problem solving.

While the amounts of money PRITECH has available are not large, PRITECH does have the advantage of flexibility. AID encourages us to think through new approaches to ORT program development. If it is appropriate, PRITECH can consider financing commodities and local costs. Because of its unique position as an AID resource but outside the AID agency, PRITECH, can and does move quite fast to plan and implement projects. After a year and a half of operation, PRITECH is at various stages of program development in a dozen African countries. Four of these programs have already been technically approved by AID and the host countries, and are ready to get underway.

Programatically, PRITECH has essentially two classes of ORT interventions. The first category, the $350,000 to $400,000 intervention, is based on a modest plan, some targets, and some definition of success. This plan is based upon an analysis of local conditions. There is a second category of intervention which is smaller and usually provides modest assistance for completing a specific ORT related task.

To date we have been hampered by three constraints. First, the overall number of qualified ORT experts is limited. Many experts are unfortunately tied to university schedules and occasionally, PRITECH encounters real difficulties in getting teams together to fit specific needs and meet country deadlines. We plan to train more ORT experts to resolve this problem. A second constraint is the shortage of funds in countries to cover recurrent program costs. Because of financial constraints, not all ORT programs can be funded at levels that an analysis of the need suggests. This underlines the importance of thinking through realistic financing systems and increased consideration of private sector alternatives.

Some anomalies in AID organization constitute the third area of difficulty. In the host countries, there is a broad basis of support for ORT programs. Also among policy makers in AID's central office, the expansion of ORT programs is a high priority. However, because of the way AID is organized, what can be done in a particular country with PRITECH resources very much hinges on the attitude of the local AID mission. We have found some AID missions with great interest in ORT, but others do not share the ORT priority. Thus, it is important to approach USAID mission leadership with senior people if one has an interest in receiving ORT services from PRITECH.

Recently, PRITECH has started to work in Africa with some of the private voluntary organizations. PRITECH is also seeking a closer relationship with some of the multilateral organizations--particularly UNICEF--so that joint country/PRITECH/UNICEF programs can be launched in places where the AID missions are not quite ready to move ahead.

There are two other parts of the PRITECH program that are important to mention. There is a small PRITECH information center that provides information and materials on ORT, that sponsors conferences like this, and that produces a small number of technical publications. There is also a short-term consultant facility at PRITECH which provides short-term experts to help in project design, evaluation, training, and a variety of other skills in a

broad range of primary health care topics. Both of these resources are accessed through the AID missions.

To summarize, PRITECH believes there is broad interest in many African countries in starting and expanding ORT programs. At the central level in AID, ORT enjoys a very high priority. It is important to translate that priority into more country-based AID assisted ORT programs, and PRITECH is ready to help make this happen.

UNICEF*

During these two days of discussions, the name of UNICEF has been mentioned several times. Because UNICEF is mostly concerned with the control of diarrheal diseases which are the first of the ten major causes of child mortality, it is therefore logical for UNICEF to be part of this discussion.

Many of the conference participants are already UNICEF partners and are already familiar with its procedures. As is generally known, UNICEF is not really a donor agency, but rather a partner for governments in the search for solutions to the problems of childhood from the global point of view of long-term development. Thus the activities to be undertaken together with the governments must occur in the context of the country's development plan and must be in agreement with national options and priorities. It is in this context that one must examine the financing of diarrheal disease control programs. It should be emphasized that UNICEF does not only provide funds but participates in the design and implementation of the programs. This participation is particularly important because the means at a country's disposal are weak, be they material means or human resources.

The diarrheal disease control program is not isolated but it is an element of a program which has four main objectives for reducing child mortality. This is the program called GOBI:

G for growth monitoring
O for oral rehydration
B for breastfeeding
I for immunization

Other related interventions reinforce these three principal elements: child spacing, supplementary feeding, and women's education. How does UNICEF finance activities aimed at reducing child mortality, activities which include as one of its components the control of diarrheal diseases? There are three sources of financing:

First, financing of ordinary resources in the context of multi-year programs which are periodically designed, developed and negotiated with the governments and submitted for approval to the UNICEF administrative board which meets every year in April or May. It is important to note that approval of multi-year programs means automatic allocation of financial resources

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* Presentation by Gilbert Grunitsky, UNICEF Representative for Central Africa.

during the whole program implementation period which can last four to five years. UNICEF tends more and more to design programs for longer periods. It should also be noted that one of the criteria used to make decisions regarding allocation of funds, the infant mortality rate of the country, is an important indicator because the countries with a high infant mortality rate receive more funds than the countries where infant mortality is low. From this, one can deduce a certain number of consequences.

If a country does not include in its program a diarrheal disease control component as a priority, at the time it develops the program, it will be difficult afterwards to include it. It is therefore at the time the program is being developed that this component should be included.

The other source of funds requires UNICEF approval but this approval authorizes UNICEF management to seek from donors the funds necessary to implement the project. It does not mean immediate attribution of financial resources. Considering how important the control of diarrheal diseases is to UNICEF in all the countries, a country which, for one reason or another, has not been able to include a diarrheal disease control component in its multi-year program, has the opportunity every year to present such a project. It should be noted that this source of assistance is somewhat uncertain because funding is not guaranteed. The situation will be different from one country to another. Some countries are "loved" by donors, others are less "loved." As a consequence, UNICEF cannot guarantee funding. But most of the donors are now sensitive to the problem of child survival, and this leads one to think that it will be relatively easy to find funds to support these types of activities.

There is also a special fund for the reduction of child mortality. This special fund plays a role similar to a spare tire. When diarrheal disease control has not been included in a regular program, and when there is no other project to deal with this important problem, then if an opportunity arises for the country to act immediately to develop a national diarrheal disease control program, the special fund makes it possible to allocate a modest amount of money--from U.S. $50,000 to $100,000--to initiate this action which will precede the development of a larger program. For some countries which are in very difficult situations, the commitment from this special fund can be as high as $500,000.

These are the three UNICEF sources to which one can turn to finance projects aimed at reducing child mortality through combatting diarrheal diseases.

There is one last source of grants where UNICEF acts as an intermediary. During the last few years, UNICEF has developed with some countries, and some organizations within these countries, fruitful relationships which permit UNICEF to obtain funds to finance some projects. There is, for instance, the Arab Fund for Economic and Social Development and OPEC. UNICEF can, when a government wishes, play the role of an intermediary between the government and these organizations to obtain financing for some projects. Depending on the organization, it can be a grant or a loan with favorable terms. There are other recent possibilities with some countries, such as the U.S., which are very sensitive to the problem of child survival and which have created a fund called "Fund for Child Survival." On occasion, these countries request

that UNICEF be the executing agency to implement certain activities. Diarrheal disease control programs could be funded from this source of financing.

These are the various options available, but it should be emphasized in conclusion, that specific child survival activities should be coupled with long term development activities which will support them. Without this support, lasting results are not possible because, in fact, all the problems addressed here are linked to poverty, and health is a "good" that needs to be acquired as other valuable goods. To obtain it, both on the national and the international level, it will be necessary to implement policies which are based on justice and equity.

World Health Organization*

In reference to the first question under this agenda, "Where is the money for ORT?" I think the discussion so far has been a slight misnomer. It is really "Where is the external money for ORT?" And we'd like to think that most of the money for ORT is where it ought to be--in the developing countries themselves. The largest source of oral rehydration salts is local production in the countries themselves. Nonetheless, it is important to talk about the availability of external resources with regard to WHO. There are four subjects to be addressed very briefly.

How much money is there in WHO for diarrheal disease control? Where does the money come from? What is it for, and how does one get it? The 1984 budget for the WHO diarrheal disease control program is $17.2 million. The budget for 1986 and 1987 goes up in excess of $21 million. Where does the money come from? It comes from 25 different sources, one of which is the World Health Organization's regular budget. All of the member states are assessed a certain amount that goes into the WHO regular budget, and the World Health Assembly decides how that is going to be divided up among various programs. The WHO regular budget only represents 12 percent of the WHO diarrheal disease control programs which means that the other 88 percent comes from 24 extra-budgetary contributors. Those are for the most part individual countries such as the United States of America, most of the countries of Western Europe, private foundations, and other international agencies.

What is the money for? The money is for all sorts of activities. First of all it helps countries in the development of all kinds of operations in diarrheal control. There are, at last count, 92 developing countries which have well-formulated plans for diarrheal disease control. WHO can make available consultants and guidelines to assist in the initial development or the revision of plans and guidelines.

There is money available for training. In addition to the support which one can receive to conduct training courses, either technical training courses for management of diarrhea or management training courses for senior staff or first-time supervisors, WHO can provide two specific training courses which it has developed--one for program managers and one for supervisors. There

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* Presentation by Robert Hogan, World Health Organization.

are now over 3,000 people from developing countries who have gone through one or the other or both of these training courses and they are available to others.

The third area is operations or the management of programs. WHO collaborates very closely with UNICEF in helping countries develop a local capacity to produce oral rehydration salts. It can also pay for other operational expenses. It depends on the priority needs.

The fourth area is evaluation. WHO has a survey methodology, a management information system, and comprehensive program reviews. If these guidelines or consultants would be useful, they are available.

The fifth and final area that WHO resources are available for is operational research. WHO supports basic operational research, particularly in the development of vaccines, in the testing of new or existing drugs, and in the epidemiology of particular diarrhea pathogens. WHO is interested in doing more in operational research, and this is a subject that has come up repeatedly over the last few days. If there are any particularly important operational research subjects, there are funds available. There are also some guidelines being prepared on the development of protocols, indicating some of the priorities which may be helpful as far as operational research is concerned.

The final issue is how to get help if one decides it is needed. The system is a model of simplicity. The WHO representative in the appropriate region should be contacted and advised of what is needed. The representative will then transfer the request to the WHO regional office, which will then either pay for it out its own funds or ask Geneva for additional support. If satisfaction is not achieved by going to the WHO country office or the regional office, then it is necessary to go one step higher. Eventually one will get an answer. It is rare for WHO not to support a reasonably plausible proposal with either resources or appropriate assistance of some kind. WHO exists only to serve member states.

CCCD*

In many respects CCCD incorporates at least some elements of what all of the previous speakers have talked about. CCCD has a component addressing diarrhea disease control. Speaking for the CCCD program is a rather large responsibility because there are many people involved in many different organizations or agencies. CCCD is funded by AID. It is a Washington-funded and managed project, not from the Office of Health, but from the Africa Bureau of AID. There are certain activities which are available to all countries in Africa that are eligible for aid. There are also some bilateral projects which are run very similarly to most AID bilateral projects. CCCD combines some of the good features of both the centrally funded projects and the bilateral projects. It has a certain amount of flexibility characteristic of centrally funded projects, and it is generally able to get a bilateral

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* Presentation by Andrew Agle, Combatting Communicable Childhood Disease Program, AID.

project designed and under way in less than two years. CCCD receives the original request at the time that the project agreement is signed.

CCCD will be setting up additional ORT training centers basically for clinical training--one in Senegal, one in Ethiopia, and one in Angola. Under the terms of the CCCD agreement, another three centers will be established. They are proposed for Malawi, Zaire, and Cameroon. Now in addition to providing some funding for the establishment of these centers, CCCD money will be used to fund programs so that people will be able to go to these centers for training. CCCD is planning to publish a journal. It will be an "epidemiological bulletin" to keep all of the member states informed of what is happening and to provide a mechanism for feedback on services and information.

CCCD grant funds are available for African investigators to look into and hopefully solve operational problems, specifically with regard to the CCCD activities and diarrhea disease control. If there is a study that one would like to do, a protocol should be submitted to the AID mission in the particular country. If there does not happen to be an AID mission in that country, then it should be given to the American Embassy, with the request that it be passed on to the CCCD project.

CCCD is currently authorized to do bilateral projects. There are currently nine on-going ones and there are three more which are in various stages of negotiations.

Other Donors

Many other countries are involved in funding oral therapy or CCCD type projects in Africa, including Sweden, Denmark, Switzerland, France, Italy. There are organizations such as the Red Cross and others who are also involved in this process.

VIII. CONFERENCE SUMMARY*

The Technology

The importance of oral rehydration therapy as a way of correcting and preventing dehydration is almost universally recognized. The homemade solution is an important element in the prevention of dehydration, but any homemade solution must be based on the local availability of effective ingredients. Though unrefined sugar may be the only kind available, it is preferable to refined sugar as it has a significant potassium content. Various grains--rice, millet, sorghum, etc.--may be more than adequate substitutes for glucose. Rice powder (and amino acids such as glycine) when added to ORS, have been shown to shorten the duration of diarrhea and reduce stool loss.

Home-based care programs need back-up services for severe/complicated cases. A standardized message, particularly as it relates to volume, is critical to a good program. If 500 cc is the volumetric measure in the home, then the amount of salts in a packet should be adjusted.

Knowledge, Practice and Behavior

To properly design any program, we need to know what mothers know about diarrhea and its treatment. We are woefully lacking in our knowledge of maternal/family behavior as related to diarrhea.

It is important to determine what foods are available to supplement ORT therapy and a child's diet.

Demand Creation

The demand for diarrhea treatment exists, as exemplified in the sales of anti-diarrhea drugs and antibiotics. The challenge is to harvest this demand and to use more appropriate types of therapy.

Practical experience should be used to create demand for ORT among practitioners. Anyone who delivers oral rehydration therapy should be trained in its use, and part of that training must include direct patient care. That is, training of all health workers should be competency-based. Physicians, nurses, pharmacists, traditional practitioners--all should be trained. It is particularly important to train those individuals who are the opinion-makers (professors, etc.) within the medical community. Diarrhea/ORT should be included in the school curriculum of health care providers and they should be tested on this information. Individuals should have to demonstrate that they can prepare and use ORT.

Mass media is valuable in helping to create consumer demand for ORS. But while mass media and print media may sensitize the population and provide

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* Prepared by Richard Cash, Harvard University.

information, there must be an element in the program that provides face-to-face information exchange and skills dissemination (as has been the case in Swaziland and The Gambia).

Attention should also be given to those elements of diarrheal disease that concern mothers. If the concerns of mothers are known, messages can be tailored accordingly. Is the loss of a child's vigor a major concern? Are mothers more concerned about the number of stools a child passes? (Rice-based ORS or amino acids containing ORS reduces the number of stools.)

People often change practices when they see someone they respect using a product. Who are the opinion leaders? The religious leaders, the teachers, the community leaders, or the politicians? It seems that medical leaders can rapidly change their ideas if they directly participate in ORT research. In many of the countries with successful ORT programs, there has been operational research or hospital-based research carried out. The researchers have then become advocates of ORT.

Implementation, Monitoring and Evaluation

Objectives, targets and activities are three key elements. The objective may be to reduce deaths, but to reach this objective, targets must be established to consider such factors as increasing access, increasing use, and improving the diet. What factors lead to the chosen targets? Are targets, such as deaths averted per year, met? Activities would include planning and training, production, logistics, education, monitoring, and a comprehensive country review. Evaluation and monitoring should begin with a look at the activities. All interested parties have to be brought into the implementation process.

Planning

The need for planning is critical; at the same time, however, it is recognized that past negative experiences with planning have led to a reluctance to plan. Filing cabinets are filled with plans that have not worked (or been used!). We need to examine in greater detail why plans have not worked and think about other models of the planning processes.

Supervision

Supervision is the critical factor in a monitoring system. Far too often supervision is seen as a way of criticizing workers rather than as an aid to improve their performance. There might well be some type of incentive system developed for supervisory personnel. Supervisors could be rewarded by promotion or commendation, based on how well their workers did. An incentive system might encourage them to improve their work and to use their time with field workers to teach rather than to criticize. In many places, supervisors are not getting the quality training they need.

Source of Assistance

There are several sources of assistance for ORT programs including multilateral, bilateral, and private and voluntary agencies. However it is generally agreed that the strength of a country program comes from within the country, not from without. With time this strength will increase and develop with the donors assisting whenever they can.

APPENDIX A

CONFERENCE AGENDA

AFRICA REGIONAL WORKSHOP ON ORAL REHYDRATION THERAPY

Lilongwe, Malawi
March 29 and 30, 1985

AGENDA

March 29, 1985

8:30 - 8:40 A.M. — OPENING REMARKS: Sheldon Cole, USAID/Lilongwe
Jim Heiby, AID/Washington

8:40 - 9:20 A.M. — KEYNOTE SPEECH

The Problems of Diarrhea and the Development of a CDD Program: Jon Rohde

- Extent of diarrhea problem worldwide

  Defining the diarrhea problem within a country

  A. Looking for mortality and morbidity data
  B. Determining health workers' perceptions
  C. Determining the public perceptions

- Elements of an ORT program

- New directions/advances in ORT

9:20 - 10:00 A.M. — WHICH TYPE OF ORT

Discussion of Alternatives: Melinda Moore

- Advantages/Disadvantages

  A. Packets
  B. Spoons
  C. Pinch and scoop

NUTRITION INTERVENTIONS: Richard Cash

10:00 - 10:30 A.M. — COFFEE BREAK

10:30 - 12:15 P.M. — WORKSHOP I. DETERMINING THE APPROPRIATENESS OF INTERVENTIONS*

12:15 - 2:00 P.M. — LUNCH

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* Workshops will be led by: Jon Rohde and Richard Cash (English).

March 29, 1985 (continued)

2:00 - 2:30 P.M. **CREATING DEMAND - RECRUITMENT AND TRAINING OF HEALTH PROVIDERS:** Richard Cash

- Who are the providers: physicians, nurses, pharmacists, traditional providers
- What type of training: lectures, demonstration units, in-country studies
- Where is training held: hospitals, clinics, schools, communities
- When is training held

2:30 - 3:20 P.M. **CREATING DEMAND AMONG CONSUMERS (Mothers/Children)**

Panel: Dale Huntington
Pitnera Mthembu
Gladys Matsebula
Saihou Dibba

- Sensitizing the public towards the principles of ORT
- Product identification

3:20 - 3:40 P.M. **COFFEE BREAK**

3:40 - 5:15 P.M. **WORKSHOP II. CREATING DEMAND**

March 30, 1985

8:30 - 9:15 A.M. **MANAGEMENT OF A PROGRAM:** Suzanne Prysor-Jones
Jon Rohde

- Start-Up
- Phasing
- Supervision/Quality Control

9:15 - 10:00 A.M. **MONITORING AND EVALUATION:** Bob Hogan

- Program objectives as the guide for evaluation
- Process indicators
- Outcome indicators

March 30, 1985 (continued)

10:00 - 10:30 A.M.	COFFEE BREAK
10:30 - 12:15 P.M.	WORKSHOP III. MONITORING AND EVALUATION
12:15 - 2:00 P.M.	LUNCH
2:00 - 3:40 P.M.	DEVELOPMENT AND MANAGEMENT: ISSUES IN AFRICAN PROGRAMS PANEL: (TBA) MODERATOR: (TBA)
3:40 - 4:00 P.M.	COFFEE BREAK
4:00 - 4:40 P.M.	HOW TO MOBILIZE RESOURCES: Jim Heiby, John Alden, Andy Agle • Where is the money for ORT? • What is it for? • How to access it?
4:40 - 5:00 P.M.	SUMMING UP: Richard Cash

APPENDIX B

WORKING GROUP CONCLUSIONS

WORKING GROUP CONCLUSIONS

Over the two days of the conference, there were three workshops:

Workshop I. Determining Appropriate Interventions

Workshop II. Creating Demand Among Both Practitioners and Consumers

Workshop III. Issues of Management and Monitoring and Evaluation

The workshops were designed to provide an exchange of information and an examination of issues, not to develop specific recommendations. Thus, the workshop summaries do not represent firm conclusions, but rather review issues the participants felt deserved emphasis.

Summary of Workshop I: Determining the Appropriate ORT Intervention

1. **In the treatment of dehydration, what is the role of ORS and what are the alternatives to complete formula ORS?**

There was general agreement that the role of ORT is critical in reducing mortality and morbidity from diarrhea.

In developing ORT strategies, it was felt that there is a need to clarify whether a strategy will focus on prevention or cure or both. This will determine the "product" which should be promoted, i.e., the sugar-salt solution is most important in the prevention of dehydration, and the complete formula ORS packets are more relevant for the treatment of dehydration.

Questions were raised on the value of indigenous solutions such as coconut milk and local teas. Research needs to be carried out on the value of indigenous ORT solutions (i.e., coconut milk, local teas, guava, etc.). The value of cereal-based solutions in reducing stool output and duration was recognized. Further research is required on local grains such as sorghum and millet. Reduction of stool output would be a very attractive selling point of cereal-based ORS.

2. **What are the possible goals of a home-based ORT program and how should such a program relate to clinic based activities?**

Therapy should be started early in the course of diarrhea so as to prevent dehydration, and therefore ORT should begin at home. Teaching mothers the importance of ORT and the methods of preparation and use are key to a home-based program. Specific guidelines for home-based care should be developed. It was noted that men should also be contacted and brought up to date on the value of this therapy. A home-based strategy must promote the concept of drinking as part of the treatment of diarrhea.

Sociological and anthropological research is essential to determine local attitudes toward diarrhea and local practices in use at present. Traditional healers should be involved in and taught the use of ORT. Clinic

backup for any home-based program is needed. The criteria for bringing a patient to the clinic should be made very clear.

There was a good deal of discussion on the need to do KAP studies among physicians. Physicians are often using therapies which are inappropriate.

There was a discussion on whether or not unclean water should be boiled when preparing ORT. One group felt that this clearly was not necessary.

3. If packets are used what would be the most appropriate size? How will availability of a standard sized container alter packet size?

There should be a standard volume used at all facilities and in the home. This volume should either relate to what is availablt locally or should be selected based on the most reasonable amount that a child should consume at one sitting.

Packets can be used where there is a good distribution system. They are often essential for home use since ingredients such as sugar are not always locally available. It is critical to keep directions for preparation and use simple and consistent.

4. What are the most important nutrition messages in an ORT program?

The critical need to continue to feed children during diarrhea and increase feeding after the diarrhea episode cannot be stressed enough. It is critical to stress continued breastfeeding in all instances. Some participants suggested that food supplements be dispensed to people receiving treatment for diarrhea.

Summary of Workshop II. Creating Demand for ORT

1. What are the major factors limiting the use of oral therapy by health care providers?

Providers tend to prescribe the more traditionally-used drugs, which are often more expensive or more profitable. In addition, the public may prefer drugs rather than ORS, since ORS may appear to simple and may not be regarded as medicine. Also health care providers are not themselves convinced that ORS is effective. It is clear that more training is needed. Some groups stressed that teaching methodologies for both mothers and workers are not well thought out and are often ineffective.

One group suggested that the demand for the treatment of diarrhea already exists, but antidiarrheal drugs rather than ORT is meeting this demand. The challenge, then, is to reorient the public to channel this demand to oral therapy. Among other methods of promotion, is the need to "educate" the pharmaceutical industry to the effectiveness of ORT.

2. Which health workers should be trained to give ORT, and how should they be trained?

It is critical to train three levels of health workers: physicians and nurses, clinic-based health personnel, and community health workers at all levels. One group stressed the need to train university professors, as they are major opinion makers. A strong emphasis was placed on competency based training. Training must have a strong element of sensitization.

Mothers are health workers in the broadest sense, and must be trained if any home-based program is to be successful.

Because good supervision is the key to reinforcing good health practices, in this case the use of ORT, there should be supervisory training for those in key positions within an ORT program.

3. Which factors about diarrhea most concern mothers? How would you obtain this information? How would you develop messages from this information?

It was pointed out that the concerns of health workers may be very different from those of mothers. Some mothers want to stop the diarrhea because it makes the child weak and can lead to death. In contrast, in some countries diarrhea may be seen as desirable. It may be viewed as a sign that the child is growing up.

It was emphasized that KAP studies could be very helpful in some areas to see how diarrhea is viewed by the public and what the traditional practices are. It is also important to determine how mothers define diarrhea. There are many types of diarrhea as perceived by the client population and only some of them are thought to require therapy.

Obviously, if an advertised product fits the perceptions of the client population, it will stand a better chance of being used.

One group felt that a long-term goal should include improved hygiene, and attitudes toward hygenic practices should also be examined.

4. What would be the most effective ways of informing the rural public about ORT? The urban dwellers?

The value of radio, press, posters, songs and TV (where available) were all mentioned. The proper mix depends on the resources available. At the same time, while the mass media is very valuable, dissemination of knowledge is still necessary. Often the most important source of information is a neighbor. This suggests the need to persuade the opinion makers of a community of the value of ORT. There is a need to recruit the support of local opinion makers and other agents of change in the community such as local healers, school teachers, and religious leaders. The need to provide ORT services before creating demand was stressed.

The use of non-medical support staff to reinforce and demonstrate ORT was important and the possible usefulness of other sectors such as agriculture should be examined to determine how they have gotten their messages across and whether ORT messages could be added on.

Summary of Workshop III - Part A: Management of ORT Programs

1. What strategies have you found effective in overcoming the major obstacles in starting up an ORT program with national coverage?

ORT programs need to be seen as part of a comprehensive health care approach rather than a vertical approach.

All groups stressed that planning was essential. Some of the elements in the planning process were: obtaining information, deciding at the national level to have a CDD program, involving multiple sectors in the planning, doing an inventory of resources and personnel, developing a good work plan, reviewing the plan, approving the plan, adapting the plan, and getting the initial activitiy off the ground.

Having a coordinator was considered essential. Pilot projects can often be helpful in creating pressure. Related to pilot projects, demonstrating the sound economics of using ORT would be helpful. For example, ORT is clearly much less expensive than intravenous therapy, and early therapy with ORT also reduces hospitalization and hence hospital costs.

2. What have been the key problems encountered in managing national ORT programs, and what strategies have been most useful in addressing them?

Among key problems, resources (money, materials, and personnel) are often limited or unavailable: plans of action are not updated, there is often a lack of corrdination at the various levels of the health system (central, intermediate, and periphery); the administrative structure may be inappropriate. People must know whom they report to and what tasks they must carry out. Specific tasks must be defined for the personnel involved in the process. In addition, there is often competition among programs.

Summary of Workshop III - Part B: Monitoring and Evaluation

1. What are the major impediments to good evaluation and monitoring?

There is a real lack of quality baseline data with which to evaluate a project. All the groups identified the lack of proper supervision as a major impediment. Supervisors must have the authority and the ability to give incentives for good work and to apply sanctions for poor quality work. Most supervisory staff seem to have little authority.

Those who carry out monitoring and evaluation activities are often poorly trained both in data collection techniques and in teaching skills to field based personnel. Furthermore, health staff often consider monitoring and evaluation extra work because they do not receive feedback on the information that they collect. There are usually too many forms to fill out with much of the information unnecessary for program evaluation.

2. What is necessary for good monitoring to take place at the local level? At the national level?

Good monitoring requires good supervision, which means well-trained supervisors who are sufficiently motivated. Supervisors must be technically competent, and they need a clear objective. They need to spend enough time at a location to be effective. Rather than just a few hours or even a day at a site, stays might be for a number of days. Supervision possibly could be done less frequently but with greater intensity.

Modest but positive experiences from the start can be very useful. Collecting limited but quality baseline data can reinforce good habits. More qualitative data are needed. That is to say, there is a need to evaluate directly knowledge and performance, and this requires more time in the field.

3. What is the best way to measure effective use of ORT among health care providers? Among mothers?

Health care workers should be directly observed treating patients. An examination of the number of cases treated and the packets used is an indirect measure of health provider use. Counting the number of children with diarrhea coming to the clinic and their state of hydration (before and after the program) would be another indirect indicator of the level of home-based care. Mothers can be interviewed to determine if they have knowledge of ORT and if they can prepare the oral rehydration solution.

APPENDIX C

REFERENCE MATERIALS

AFRICA REGIONAL WORKSHOP ON ORAL REHYDRATION THERAPY

REFERENCE MATERIALS

Lilongwe, Malawi, March 29-10, 1985

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APPENDIX D

PAPERS PRESENTED AT THE CONFERENCE

ORT COUNTRY EXPERIENCES

Cameroon
Sierra Leone
Malawi
Uganda
Zaire I
Zaire II
Zambia

REGIONAL SEMINAR ON THERAPY BY ORAL REHYDRATION

REPORT OF DELEGATE FROM CAMEROON

Malawi

INTRODUCTION:

Daily experience in the hospital has shown that diarrheal diseases in Cameroon constitute a public health hazard affecting mostly children under five years of age. Within this age bracket, children who are between one and 12 months old constitute a special target group, as one-fifth of the death toll from diarrheal disease comes from this population. This percentage recorded in Yaounde Central Hospital is higher than that observed in the villages.

Since children in low socio-economic levels are easy victims of diarrheal diseases, these diseases are of high priority within the framework of the National Primary Health Care Project. Combatting diarrheal diseases is the theme of a national program involving:

- improvement of health conditions;
- improvement of the supply of drinking water;
- prevention of diarrheal communicable diseases (i.e., measles);
- health education;
- promotion of good feeding conditions; and
- oral rehydration.

With regard to oral rehydration, which is our concern, the implementation of the program involves training staff in a pilot unit (the Central Hospital). These staff will, in turn, train people in their various communities. Simultaneously, in the villages, the Primary Health Care Program caters to the mother and child. At present, we are at the first phase of staff training.

THE YAOUNDE HOSPITAL ORAL REHYDRATION CENTER

In 1983, the following observations were made about morbidity:

- measles, 17 percent (hospitalization);
- acute gastroenteritis, 16 percent, while 33 percent have both syndromes (considering the fact that measles generally have a diarrheal component).

With regard to mortality, diarrheal diseases are first, accounting for 10 percent of the total deaths recorded in the Pediatric Ward and 21 percent of the deaths recorded among children between one and twelve months of age. Seventeen percent of the death toll among children of the same age group is caused by measles alone. This is due to various reasons including:

- unsatisfactory feeding of sick children;
- arrival at hospital in an advanced state of dehydration;
- taboos (ceasing to drink water during diarrhea, refusing to let children eat meat, etc.)

When accepted and taken seriously, oral rehydration should significantly improve this situation by preventing dehydration from becoming serious.

OPERATION OF THE (YAOUNDE) CENTRAL HOSPITAL REHYDRATION UNIT

STAFF:

The staff of the Central Hospital Rehydration Unit includes two doctors (one pediatrician-professor, and one general practitioner), two registered nurses, and two ward attendants. The Unit has 12 beds and operates from six to eight hours during the day. After a period of observation, the condition of the child dictates the appropriate treatment. Whenever possible, the mother is told to continue the oral rehydration treatment at home. Should the child's condition worsen, however, the child is put on full admission.

PERSONNEL IN TRAINING:

Personnel receiving training at the hospital include medical students, nurses, and paramedical staff (coordinators of public health services and people in charge of training in health education). These people undergo a three-month course, after which they receive further education in their various communities, and later, receive refresher courses.

HOW ORAL REHYDRATION IS ADMINISTERED AT THE CENTRAL HOSPITAL

The Unit has WHO sachets, and one liter of water is given per sachet. First, the child is weighed. The quantity of solution to be administered within six hours is calculated on the basis of the degree of dehydration observed. The solution is administered progressively with a spoon to avoid distention of the stomach which would cause the child to vomit. If the child is still breastfeeding, he continues to do so. If he is both breast and bottle-fed, bottle-feeding temporarily ceases. If the child is only bottle-fed, the food should be diluted with the solution. A level of dehydration reading is taken every two hours. After six or eight hours, if there are signs of improvement, the child is discharged and treatment continues at home. If the condition becomes worse, the child is put in the hospital and rehydration is intravenous.

ADVANTAGES:

An important advantage of oral rehydration is economic: it can save both the hospital and the families of the patients time, labor, materials, and money. In addition, the method has become increasingly accepted by the people.

PROBLEMS:

The available data on morbidity are not complete; however, we can state that the number of diarrheal cases for which patients have been hospitalized has decreased to ten percent (compared to 30 percent in the past). Furthermore, mortality does not seem completely curbed, for dehydration not only affects children who are very badly fed or hospitalized for collapse, but it affects others as well.

Certain difficulties have been encountered in implementing the oral rehydration program. These include:

- proscription of water in diarrhea cases;
- children not well fed as a result of certain taboos proscribing the use of meat in their diet;
- preference "and request" by some mothers of intravenous rehydration;
- possibility of procuring (WHO, UNICEF) oral rehydration solution--break in such stock supplied.

CONCLUSION:

We hope that the oral rehydration program method will meet its objective since this method is working relatively well.

The Government may wish to have the option of stocking oral rehydration salts in the country to meet the requirements of the people.

ORAL REHYDRATION THERAPY
THE SIERRA LEONE EXPERIENCE

BACKGROUND INFORMATION

Situated in West Africa, Sierra Leone has a population of about 3.5 million people, covers a surface area of about 28,000 sq. miles, shares a common boundary with Guinea (French) and Liberia. The major health problems include neo-natal tetanus, measles, malaria, diarrheal diseases, whooping cough, tuberculosis, malnutrition, anemia, and pneumonia. The infant mortality rate is very high--136 per thousand live births for the Western Area where health facilities are improved, and up to 250 per thousand live births in certain provincial areas. About 75 percent of the population live in rural areas, with mothers and children (i.e., women between the ages of 15 and 45 years of age and children under 15 years of age) accounting for about 65 percent of the total population. The country has a young population, with about 43 percent under 15 years of age.

Generally, health facilities are concentrated in urban towns, making them inaccessible to a majority of the population because of either poor transportation systems or exorbitant charges. Most of the health facilities are ill-equipped and understaffed and suffer from gross shortages of essential drugs. Sanitation is also far from satisfactory. The majority of the population depends upon unprotected sources of water for their water supply. Waste disposal (both liquid and solid) is a major problem, especially in big towns, creating breeding sites for insect vectors and rodents. Subsistence farming constitutes a major occupation of the population, whose illiteracy rate is still very high (over 75 percent). Cultural practices and taboos abound, and some hamper the success of certain health interventions.

In 1977, the Ministry of Health, with support from the World Health Organization and certain nongovernmental organizations, started a Primary Health Care (PHC) pilot program in one chiefdom in the Bombali District, the northern province of Sierra Leone. Based on the success of the pilot project and other projects in other parts of the country, PHC was extended to other chiefdoms in the Bombali District. The Ministry of Health has finally accepted PHC as a national program and has appointed a national coordinator, developed a national action plan, and provided budget allocations.

NATIONAL DIARRHEAL DISEASES CONTROL PROGRAM

Even though there are no adequate statistical data on the exact incidence, prevalence, and mortality of diarrheal diseases, the Ministry of Health believes that diarrheal diseases are a major health problem and includes them on the list of priority diseases in the country.

In response to the need to control the death and debilitating effects of diarrheal diseases, in 1980 the Ministry of Health formed a National Diarrheal Diseases Control Program with a pediatrician as program manager. A steering committee comprising an epidemiologist, health educator, nutritionist, and

public health specialists was formed to work with the program manager in the planning, implementation, and evaluation of a national program on diarrheal diseases control (DDC).

1. A National Plan of Action

The first major task of the committee was the formulation of a national plan of action, to serve as guidelines for the execution of a DDC program in the country.

Due to the fact that we did not want to limit our activities to the importation of ORS supplies by donor agencies, the plan stipulated that ORS packets would be used mainly in the hospitals, health centers and other peripheral health units, and mothers would be encouraged to use homemade solutions at home for the early cases of diarrhea. The plan gave top priority to orientation and training programs at various levels for different categories of personnel. This was because, even though oral rehydration had been utilized in the country since the 1930's, the concept approaches and methods varied widely with no standardization. Three levels of training were planned:

- Orientation (1 week duration) for medical officers, especially pediatricians and those in charge of hospitals, matrons, and senior public health sisters.
- Training (also 1 week duration) of peripheral health unit staff including dispensers, nurses, endemic diseases control unit assistants, and public health inspectors.
- Training of village health workers and other extension workers.

With emphasis placed on homemade solutions using common salt, sugar and water, there was a driving need to standardize measuring, mixing and administration devices and procedures. The plan stipulated that eight level teaspoonfuls of sugar, one level teaspoonful of salt, and three and one-half pints of water are to be used in preparing a liter of the solution. This solution should not be kept for more than 24 hours. In terms of administration, it was agreed that children under six months of age should be given at least one full pint of the solution per day, while older children and adults could be given the entire liter per day. Babies should be given ORS with a cup and spoon, while older children and adults could take it by cup.

2. Activities

The main activities that have been undertaken by the National DDC program are:

- Procurement, storage and distribution of ORS packets. Presently, ORS supplies come mainly from UNICEF and WHO.
- Training of different categories of personnel.

- Supervising and monitoring ORT activities.
- Collecting, analyzing and utilizing statistical data relating to diarrheal diseases.
- Organizing back-up activities for treatment of diarrheal diseases in hospitals and other health units, i.e., severe cases.
- Organizing follow-up activities for the control of diarrheal diseases, e.g., improved sanitation, nutrition, and health education, in the community.

3. Management

In Sierra Leone, the DDC Program is integrated with the Primary Health Care Program, and presently the training and distribution aspects are closely linked with the Expanded Program on Immunization (EPI), an integral aim of the Maternal Child Health (MCH) Program. This has made possible the utilization of 10 years of experience of the EPI in the management of DDC. In addition, except for the national level where there is a separate program manager for DDC, we are using the same personnel at all levels as the EPI. This includes:

- peripheral level - officer in charge, i.e., nurse/dispenser or Endemic Diseases Control Unit Assistant
- district level - public health sister
- provincial level - principal medical officer

It is also interesting to note that both program managers of EPI and DDC are directly answerable to the Director of MCH services who, in turn, is answerable to the chief medical officer.

ORT OPERATIONS RESEARCH PROJECT

It did not take long to realize that while the implementation and management of DDC is similar to the EPI, the action required of the community differs greatly. What we do for the people in the EPI, the people have to do for themselves in DDC. With the EPI, when the mothers presented themselves and their children, we did the immunization. But with DDC, mothers themselves have to mix and administer correctly the oral rehydration solutions.

The change in orientation represents a bigger challenge and requires more effective community participation through adequate training and motivation, not only of health workers but of community members as well. Because of this, the Ministry of Health approved the presentation to PRICOR of a research project aimed at identifying the best ways to train mothers on ORT. Fortunately, PRICOR approved the funding, and the operations research is currently underway.

1. Objective of the Project

The main objective of the project is to identify the best way(s) of training mothers about oral rehydration therapy. The project examines aspects of motivation and supervision and hopes to answer the following questions:

- who are the best trainers of mothers;
- what are the best methods for training;
- where are the best places for training;
- what aspects should be included in the training;
- what channels/institutions in the community could be used to reach mothers;
- who else, in addition to mothers, should be trained in ORT.

2. Methodology

The methodology was based on operation research techniques that comprise three main aspects:

Problem analysis	-	the problem is broken down into smaller/manageable components in order to identify specific issues of importance.
Solution development	-	based on a good understanding of the problem and issues involved, certain systematic techniques are employed to develop alternative solutions to the problem.
Field testing	-	the validation process, wherein the solutions developed are tested.

3. Activities

Some of the relevant data needed to analyze the problem adequately were obtained by reviewing literature on ORT both within and outside of our country. Realizing, however, this did not provide enough information, we decided to undertake a baseline survey. The objectives of the survey were as follows:

- to identify factors leading to the propagation of diarrheal disease in the community;
- to determine what mothers knew about diarrheal diseases;
- to determine the availability of ingredients and measuring devices for preparation and administration of ORS;

- to identify effective methods of communication in the community;
- to identify possible trainers of mothers on ORT.

A total of 980 women and 133 potential trainers were randomly selected from four chiefdoms in the Bombali District. The major findings of the survey were as follows:

(a) Factors leading to the propagation of diarrheal diseases

The survey revealed that poor environmental sanitation including water supply, waste disposal, food hygiene and personal hygiene were major contributing factors to the propagation of the diarrheal diseases in the community. Only 21.8 percent of the women surveyed collected their drinking water from protected sources; less than 60 percent said they covered stored water; and less than 2 percent actually boiled drinking water. With regard to waste disposal, more than half of the women had no organized method of refuse disposal, and 36.5 percent reported that they had no toilet facilities and relied on the bush for excreta disposal. Of the latrines available, 95.3 percent were infected with insects or were filthy, mitigating the positive aspects of using a pit latrine. Despite the fact that leaves and water were mainly used for anal cleaning, only 21.6 percent of respondents said they washed their hands. This is particularly upsetting when one realizes that the majority of mothers prepared food for their children and 56.3 percent of them used their hands to feed the children.

(b) Knowledge of mothers about diarrhea

More than half of the women reported that at least their youngest child suffered from diarrhea within the last three months (diarrhea being defined as three or more watery stools per day). Despite this high incidence, mothers knew little about the real causes of diarrheal diseases. Moreover, 62.8 percent of women believe that "bad breast milk" was the cause of such diseases, and that this was associated with a condition locally known as BANFA, which is believed to result from the mother having had sexual intercourse with another man before the child was weaned, a practice which is traditionally forbidden. Only one in four mothers had heard of the salt/sugar solution and only five percent testified to having used it. Worse still, only a handful could give the correct formula. It is, therefore, not surprising that only 7.6 percent of the mothers believed that the salt/sugar solution was good treatment for diarrheal diseases. Furthermore, 47.1 percent thought "capsules or tablets" were the best treatment while 26.4 percent stated "nature medicine," meaning concoctions prepared from leaves, herbs and roots.

(c) Availability of Ingredients and Measuring Devices for ORS

In most homes, salt was always available, but sugar was not. More than 80 percent of survey respondents reported that sugar was never available in their homes, even though it was sold in 60 percent of the villages. It is believed, however, that if mothers are convinced of the usefulness of ORT, obtaining sugar will not pose a serious problem.

Pints for measuring water were available in 85 percent of the homes, and containers for mixing the solution were available in almost every home. The problem is with measuring devices for salt and sugar. Teaspoons were present in 61.9 percent of the homes, and a check revealed that almost all of them were of standard size. Bottle caps, the next possible alternative, were available in 20 percent of the homes, but were believed to be available in about 60 percent of the villages. The fact that 40 percent of the homes did not have teaspoons suggests that the bottle cap, which could be more cheaply obtained, should be encouraged as an alternative.

(d) Effective Methods of Communication

The survey revealed three predominant modes of disseminating information in the community: meetings, town crier (announcer), and, person-to-person. Principal sources of information outside the village were the village headman, the town crier, traders, village health workers and lorry drivers.

The chief sources of health advice were health workers (various categories) and traditional healers, but in 82.1 percent of homes, the husbands were the decision-makers on health issues. This suggests the need to involve husbands in our ORT programs.

Most mothers, 97.8 percent, responded that traditional organizations or "secret societies," mainly the Bundu Society (that heals with female circumcision), existed in their villages and a majority of mothers get information through these societies. Despite the secrecy of these organizations, we must attempt to involve them, at least indirectly through their leaders.

Other possible sources of communication were educational leaflets and posters: more than half of the mothers were able to retain relevant documents, especially clinic cards and political posters. At the present time, the radio is virtually ineffective as a means of disseminating information. Only a few households (18.3 percent) had radio sets, and radio reception in the provinces is very poor.

(e) Possible Trainers

The statistics reveal that no one approach will be adequate. Since health workers of various categories and traditional healers have been named as main sources of health advice, they must, of necessity, be trained as trainers. In addition, the village hierarchy (headmen, elders, etc.) and secret society leaders could be used to disseminate information about ORT. School teachers could also be appropriate trainers. As teachers, they should be responsive to learning new ideas and be skilled in passing the ideas on to others. Using teachers as trainers may also make it possible to attack the problem from below, that is by teaching the school children about ORT in the hope that they will bring the information home to their mothers.

The survey further indicates that demonstrations in conjunction with community meetings are the best technique for training mothers and disseminating information generally. Illustrated leaflets and posters, to be kept by mothers for later reference, could also be effective since most mothers retain health documents. Whatever the specific method, it is important that as large a segment of the community as possible be involved.

Using these and other data, a working group employed an operations research technique--multiple criteria utility assessment, to evaluate various categories of possible trainers and training methods against a set of criteria (e.g., time available, accessibility, similarity of new work to present duties, proportion of target likely to be reached, and cost). From this exercise the working group selected three main groups of trainers: village health workers and traditional birth attendants, school teachers and pupils, and community leaders. As a means of testing their suitability, these three groups are currently training mothers in three different chiefdoms. Group discussions, demonstrations, stories and leaflets have been the main communication techniques used. After six months of fieldtesting, an assessment will be conducted to determine the best means of training mothers about ORT.

CONCLUSIONS

Even though the National Program on Diarrheal Diseases Control was set up in 1980, we started implementation only quite recently. First, we wanted to draft a plan of action as a guideline for implementation. This has now been completed, and we are currently engaged chiefly with orientation and training programs.

After organizing the orientation program for medical officers and other senior health personnel at the national level, we are now organizing district level trainings for peripheral health unit personnel. We are placing considerable emphasis on this level, as it is the meeting point for both the doctors and the community members. Thus, it offers an opportunity for relevant information to flow both upward and downward.

Our major problem to date has been that information is not getting to the mothers as one would expect. One factor that may be responsible is that health workers have been used to provide services with little or no effort made to teach them how to transfer skills and knowledge to the consumer. It therefore poses a new challenge that requires special treatment.

We hope that in the future, ORT will be more widely utilized, and we hope to achieve this wider utilization through appropriate education of the mothers and other community members, national production of ORS, and identification of alternative homemade solutions. As one medical officer remarked: "The agony of watching a dehydrated child die, just because I.V. fluids are not available or parents cannot afford to buy them, has now been greatly reduced through the use of ORT."

Doctors and other health workers are being convinced of the usefulness of ORT. Our challenge now is to convince the mothers and even the grandmothers and fathers. This is the focus of our current effort.

MALAWI NATIONAL CONTROL OF DIARRHEAL DISEASE PROGRAM:

ORAL REHYDRATION CORNERS

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THE MAGNITUDE OF THE PROBLEM

Diarrhea is a serious public health problem in Malawi. It is the third most common illness in children under five years of age, after respiratory diseases and malaria, and is among the top five killers of children under five years of age.

In Malawi, diarrhea kills directly and immediately, mainly through dehydration. It also kills indirectly and later, by precipitating protein energy malnutrition, which is also a top cause of death in children.

Health facility-based mortality and morbidity statistics underestimate the magnitude of the problem. They represent the tip of the iceberg, since most suffering and deaths due to diarrhea occur in the villages and do not come to the attention of health providers.

CONTROL OF DIARRHEAL DISEASES PROGRAM

The Control of Diarrheal Diseases (CDD) Program in Malawi was started in 1981. The organizational structure of the Program consists of a CDD coordinator, two assistants (one for environmental sanitation activities), two CDD committees, and three CDD regional teams, one for each of the three regions of the country.

The National CDD Committee is the policy-making body, and its membership is multisectorial. The committee is chaired by a Principal Pediatrician, and the Chief Public Health Officer serves as its secretary. The CDD subcommittee, the executive body of the CDD Program, is chaired by the Deputy Chief Medical Officer. The secretary of the CDD main committee also serves as the secretary of the subcommittee. The other members of the subcommittee are the chairman of the CDD main committee, the CDD coordinator and assistant coordinators, and a regional public health nurse.

The three regional CDD teams are headed by pediatricians. The members are regional public health nurses and regional health inspectors. The main function of the regional teams is to monitor the activities of ORT corners.

Fully integrated within the extensive network of maternal and child health (MCH) and primary health care (PHC) infrastructure, the CDD program is based on the following World Health Organization's recommended strategies:

- case management with ORT;
- strengthening environmental sanitation activities;
- improving MCH and PHC practices;
- epidemic control (data collection for action).

In order to reduce the high mortality associated with diarrhea, the Malawi CDD Program adopted case management with ORT as its main strategy, which strengthened and consolidated activities associated with the other strategies.

Of note in the area of environmental sanitation is the provision of safe drinking water, mainly through gravity-piped water schemes, to 53 percent of the rural population. Ninety percent of the country's population of seven million live in rural areas.

ORAL REHYDRATION THERAPY

The advantages of ORT over intravenous therapy include the following:

- limited training and equipment are required for the use of ORT;
- household food solutions, and salt and sugar for preparation of homemade sugar and salt solution are relatively available;
- the cost of ORT is less;
- the thirst of a child acts as a safeguard against overhydration;
- the potential exists for having even the most remote health worker trained in ORT;
- the ultimate potential is increased access to health services through training mothers, and eventually fathers, to treat their own children at home.

These would result in an equitable coverage of health services in favor of the vulnerable rural masses. It would also enhance the involvement and participation of the community in its own care.

UNICEF oral rehydration salts (ORS) packets are distributed to all health facilities. The increased use of these packets nationwide is seen as the attack phase of the Program. The ultimate objective is to train mothers and primary health workers to offer ORT using household food solutions such as rice water, or salt and sugar solutions, to prevent or treat dehydration during all episodes of diarrhea.

ORAL REHYDRATION CORNERS

In order to intensify ORT, all health facilities are establishing ORT corners whose functions are three-fold:

- treating of diarrhea with ORT;
- teaching health providers and mothers about ORT and its proven efficacy, and about the importance of maintaining good nutrition during episodes of diarrhea by offering appropriate food and continuing breastfeeding;
- serving as a point of entry into the community-based health infrastructure, which in Malawi includes village health committees, primary health workers, surveillance assistants and traditional birth attendants.

ASSESSMENT OF ORT ACTIVITIES

In mid-1984, two members of the CDD Committee made field visits to most health facilities throughout the country to assess ORT activities. The following were their findings:

- Not all health facilities had set up ORT corners.
- ORS packets were improperly dissolved at several hospitals.
- At some hospitals, ORT officials dispensed ORS to mothers without treating their children first, and without demonstrating how to dissolve the packets and how to administer ORS solution.
- Some hospital staff did not appreciate the importance of ORT corners. They underestimated the importance of diarrhea as a national public health problem by basing its seriousness on hospital morbidity and mortality statistics. They did not appreciate the fact that the CDD Program's ultimate client is the mother in the community where diarrhea is a common and serious problem.

SOME RECOMMENDATIONS ARISING FROM THE FIELD VISITS

- ORS packets should not be handed out to mothers for the time being. Mothers should be given ORS solution for use at home only after their children have been treated at health facilities.
- Regional CDD teams should be appointed to monitor CDD activities on a regular basis.
- Three regional ORT training centers should be established, one for each region of the country.
- Training on ORT should be arranged at national, regional, and district levels.
- Health education on ORT through mass media should be intensified.
- Community-based mortality and morbidity data should be collected.

All these recommendations are being implemented.

According to the World Health Organization, several research studies in the use of ORT at the community level have shown decreases in the number of deaths from diarrhea by as much as 50 to 60 percent over a one year period.

Since a community-based health infrastructure potentially capable of implementing the CDD Program is already largely in place in Malawi, we believe our target of reducing by 40 percent by 1990 the diarrhea-associated mortality in children under five years of age is realistic.

UGANDA NATIONAL PROGRAM FOR THE CONTROL OF DIARRHEAL DISEASES

START-UP PROBLEMS AND STRATEGIES TO SOLVE THEM

Dr. Paul Sekeitto
CDD Program Manager

The Uganda National Program for the Control of Diarrheal Diseases (CDD) was launched in February 1984. Our main goal is to reduce by 40 percent within five years the mortality from diarrheal diseases in infants and young children. Within one year of program implementation, a number of problems have been identified and various strategies are being pursued.

The program's successes to date are the following:

- Doctors and other health workers at all levels of our health clinic are increasingly accepting ORT as the best treatment of acute diarrhea with dehydration.
- ORS is being distributed throughout the health system as part of our drug distribution system.
- Four MLM courses and thirteen operational-level courses have been conducted successfully.

ACTIVE INVOLVEMENT OF PRACTICING DOCTORS

The participation of the practicing doctors was recognized as critical to the successful implementation of the program because diarrhea in infants and young children is one of the leading problems in pediatric practice in Uganda. Doctors also have a great deal of influence over the determinations of which medical technology will be promoted and to what extent.

To obtain the above participation and support of practicing doctors, a number of strategies have been pursued:

- A monograph, "Oral Rehydration Therapy: Ugandan Perspective," was published by the Department of Pediatrics and Child Health of Makerere Medical School, with assistance from UNICEF Kampala. The aim of this publication was to help health professionals understand the need to establish ORT as the best quality treatment of acute diarrhea and dehydration.
- A Scientific Conference on ORT was organized by the Uganda Medical Association (UMA) as part of the opening ceremony in February 1984. The proceedings of this conference have been published as a special supplement of the Uganda Medical Journal. A second Scientific Conference on Management of Diarrheal Diseases was held on March 22-24, and the proceedings of these sessions will also be published.

- Doctors are actively involved in the establishment and operation of ORT units in the country, and are encouraged to share their experiences with others through scientific conferences.

- Doctors are involved in reviewing training materials. Doctors in training institutions are responsible for teaching undergraduates and updating their curriculum accordingly.

- Doctors have been called upon to play a major role in operational research for the effective implementation of our CDD program.

PARTICIPATION OF NONGOVERNMENTAL ORGANIZATIONS

In Uganda about 40 percent of the health services are provided by NGOs, of which the church organizations feature prominently. It has therefore been important to have the active involvement of these groups. The Government of Uganda re-emphasized its policy to work closely with NGOs and to make available to them all facilities they need to play an active role in the program. These include:

- ORT Unit equipment
- supply of ORS
- provision of training materials
- participation in training courses at all levels
- supply of health education materials
- participation in scientific conferences
- participation in operational research

TRAINING OF HEALTH PERSONNEL

Present health practices in Uganda are in contradiction to current scientific knowledge about the management of acute childhood diarrhea. Hence, we recognize the need to conduct in-service training for our health personnel during the initial stages of our program. Using as a model training materials from CDC and WHO, a set of training modules have been prepared to suit Uganda's particular situation. Two levels of training courses are now being offered to every area, a mid-level managers course mainly for health personnel responsible for planning, implementing and monitoring the program in their respective communities, and an operational-level course for health personnel who routinely provide services at all levels. It is important to note that the choice of participation in these courses is critical to effective training. The continuous monitoring and evaluation of the training courses is also useful.

DISTRIBUTION OF ORS

At the start of our program, ORS was distributed separately from the drug distribution system of the Ministry of Health. This approach was recognized as expensive and difficult. As a result, the distribution of ORS has now been made part of the country's drug distribution system. The quantity of ORS delivered to a health facility is determined by the health personnel

in charge. This approach ensures that every health facility meets the ever-increasing demand for ORS.

OPERATIONAL RESEARCH

Although we now have the knowledge and skills needed to implement the program, we need to know more about those practices in our own communities that prevent effective utilization of this low-cost therapy. Our operational research strategies have been the following:

- Our review of current practices in the management of acute diarrhea revealed major areas needing research.
- Operational research guidelines to assistance potential investigators have been prepared with the assistance of UNICEF KAMPALA and CCCD.
- An operational research workshop in Diarrheal Diseases to orient potential investigators to methodologies and preparation of study protocols is to take place next month. Participation in operational research is not limited to health professionals only. Social workers and others receive equal attention.

PUBLIC PROMOTION OF ORT

To be effective, ORT must be acceptable to both health personnel and the public at large. Hence, intensive community health education is needed. To this end, several strategies have been designed. Routine health education is given at all health facilities during clinic attendance; health education is provided on Uganda radio and television; and health issues are discussed in public addresses to women's organizations.

All of these programs have had limited success, however. The clinic-based health education and the public addresses reach only a limited audience. The radio and television coverage is similarly limited in value since the majority of our population do not have these facilities. Hence, the problem of conducting a national campaign to promote ORT in rural communities has not yet been solved in Uganda. We are now planning to employ social marketing methods in the hope that this might prove more successful. I hope to learn from this workshop how best to ensure that every Ugandan is aware of and knowledgeable about the use of this simple, effective therapy.

CONCLUSION

I would like to conclude by stating that Uganda is committed to the control of diarrheal diseases and, hence, to the reduction of diarrhea-associated mortality. Many implementation problems are likely to occur, but we are prepared to recognize them and to attempt to find acceptable strategies for solving them.

ORT AT THE PEDIATRIC EMERGENCY SERVICE OF MAMA YEMO HOSPITAL FIRST 26 WEEKS: AUGUST 1984 - FEBRUARY 1985

Cit. Seruvugo Habimana
Melinda Moore, M.D., M.P.H.
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Kinshasa, ZAIRE

Diarrheal diseases are among the leading causes of child morbidity and mortality in the developing world today, and particularly so in African countries. Building upon its infrastructure and experience from the EPI (PEV) program, Zaire began its nationwide program for control of childhood diarrheal diseases in 1984. With the support of PEV/CCCD, this program included establishment of a reference ORT service in the pediatric emergency ward of Mama Yemo Hospital in Kinshasa. Mama Yemo Hospital has 2,000 beds. It is the largest hospital in Zaire and one of the largest in Africa. This report summarizes activities and findings during the first 26 weeks, from August 13, 1984 through February 8, 1985.

After first contacting the hospital director and the chief of pediatrics at Mama Yemo, the PEV/CCCD team participated in conferences for pediatric physicians and nurses to orient them to technical and practical aspects of diarrheal disease control and ORT. The ORT service was launched the following day. PEV/CCCD provided a "kit" of start-up materials, including a mixing bowl and large spoon, cups and spoons for ORS, and forms to be completed for diarrhea cases. ORS itself was autofinanced from the outset. Later, the cost of ORS was incorporated into the 45Z (approximately U.S. $1.00) patient fee.

After the first week of on-site assistance from the PEV/CCCD team, ORT activities became increasingly incorporated into the pediatric service routine. The head nurse was responsible for day-to-day supervision of ORT activities. He also collected patient forms at the end of each week and prepared a weekly line listing. These listings were analyzed by hand (pocket calculator) at first, and were later entered and analyzed on a Kaypro 4 microcomputer. When operational problems were discovered through analysis of these weekly data, conferences were held (after Weeks 1, 16, and 26) to present findings to physicians and nurses and to discuss proposed solutions. Now that the data have been entered into the computer, more precise problem-solving analyses can be undertaken and findings discussed with hospital personnel in a more timely manner.

During the first 26 weeks of the ORT service, a total of 1,520 diarrhea cases under five years were received and analyzed. Ninety percent of the cases were under two years, including 60 percent under one year and 30 percent from 12-23 months. There was a slight male predominance among the cases. Approximately one-fourth of all cases were classified as Plan A (no apparent dehydration), one-half as Plan B (moderate dehydration), and one-fourth as Plan C (severe dehydration). The average duration of treatment was

approximately seven hours for Plans A and B, and 12 hours for Plan C. However, one-third of Plan B cases received less than four hours of treatment at the center. Virtually all cases in Plan A were treated exclusively with ORS (95 percent), as were the vast majority of Plan B cases (90 percent). A similar proportion of Plan C cases received both IV and ORS (85 percent). Discharge status was recorded for approximately 40 percent of all cases. The proportion of cases rehydrated and sent home decreased from 72 percent to 64 percent to 34 percent for Plans A, B, and C, respectively. Approximately one-fourth of cases in Plans A and B were hospitalized and slightly over one-half of cases in Plan C. The reported case fatality was two percent for Plans A and B and ten percent for Plan C.

The three principal indicators used to evaluate the quality of ORT services were quantity of fluid prescribed (ml/kg), quantity administered (ml/kg), and percent weight gain during treatment. Each indicator was compared with criteria recommended for the three treatment plans. The mean quantities prescribed for Plans A, B, and C respectively, were 34, 51, and 102ml/kg. However, 26 percent of Plan B cases and 40 percent of Plan C cases received inadequate prescriptions: <50 ml/kg (Plan B) and <100 ml/kg (Plan C). The quantities administered for Plans A, B, and C were 43, 73, and 112 ml/kg, respectively. To be considered "adequate" or "marginally adequate" the quantity administered must be (a) >= lower limit recommended for each plan (>=20, >=50, >=100 for Plans A, B, C) and (b) >= quantity prescribed for that child. Using these criteria, 37 percent, 48 percent, and 65 percent of cases in Plans A, B, and C respectively did not receive an adequate amount of fluid. Similarly, there was generally inadequate weight gain following rehydration among children who were discharged home: averages of 2.9 percent, 4.2 percent and 6.1 percent for Plans A, B, and C, respectively. This corresponded to 32 percent, 69 percent, and 98 percent of cases (in Plans A, B, C) who did not regain adequate weight as defined by our criteria: >= 2 percent (Plan A), >= 5 percent (Plan B), >= 10 percent (Plan C).

As a result of these and additional analyses, we discussed the following recommendations with hospital personnel at a recent conference:

- All Plan A cases should be treated on-the-spot. (This is Zaire's CDD policy.)
- The case forms should be fully completed for each patient.
- The quantity of fluid prescribed for Plans B and C should be increased, e.g., 80-100 ml/kg (Plan B) and 110-125 ml/kg (Plan C).
- Intravenous fluids should be given as rehydration solutions only to Plan C cases. Perfusions given for Plans A and B cases should be justified on the patient form, e.g., quinine for malaria.
- The quantity of fluid administered should be increased, especially for Plans B and C. One should give almost double the quantity prescribed, with close clinical surveillance during treatment and frequent reweighing of children.
- All cases discharged home should have gained the weight corresponding to the quantity prescribed, i.e., corresponding to their estimated weight loss due to dehydration.

ESTABLISHMENT OF ORAL REHYDRATION SERVICES AT HEALTH CENTERS IN KINSHASA

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INTRODUCTION

The Expanded Program on Immunizations in Zaire has been concerned since 1977 with the prevention of six childhood diseases through timely vaccination of young children. In 1982, the program expanded its activities to include the control of diarrheal diseases and malaria, two diseases that contribute significantly to childhood morbidity and mortality in Zaire. The national plan of action for diarrheal disease control was approved in 1984, and full scale activities began that year. An oral rehydration service was first established at Mama Yemo Hospital in August 1984. ORT services were subsequently extended to approximately 45 peripheral health centers in Kinshasa, beginning in January 1985. The present report reviews procedures and results from this ORT training throughout Kinshasa.

ORS was available through the PEV/CCCD program for nearly one year before the full-scale CDD program was launched in August 1984. However, ORS was generally not used at the health center level except for very few interested centers, notably those run by Catholics and the Salvation Army. PEV/CCCD recognized that ORT was not being adequately promoted in Zaire and therefore set out to help expand these services, first at the central hospital level (at Mama Yemo Hospital), the largest in Zaire, and subsequently in peripheral health centers. After their early experiences at the ORT service at Mama Yemo, PEV/CCCD personnel began to develop a manual on how to establish ORT services at the health center level. The final version of this manual should be available within the next few months.

In January 1985, a PEV/CCCD ORT training team was formed, consisting of a PEV/CCCD technician (who has participated from the beginning in the ORT service at Mama Yemo) and a short-term medical consultant. This team was responsible for helping to establish ORT services in 45 of approximately 130 peripheral health centers in Kinshasa. The criteria for selecting these centers were (a) size of population served; (b) number of patient visits; (c) accessibility; (d) regularity of surveillance reporting to PEV; and (e) quality of vaccine cold chain.

METHODS

The general training plan for each health center consists of the following visits:

- First visit: contact with the center, general description of ORT--its use and efficacy--and arrangement of a date for the following visit.

- Second visit: conference for health center personnel to orient them to theoretical and practical aspects of ORT.

- Third visit: to help centers begin their ORT activities. (This visit was added after early experience suggested that personnel could benefit from on-site assistance to help establish their ORT.)

- Fourth visit: follow-up and evaluation of early ORT activities at the center. These visits are unannounced and are generally planned at times when patient load is expected to be heavy. During these visits, the team observes the ORT service, evaluates the level of understanding of material presented at the conference, systematically evaluates difficulties in the use of the patient forms and in the delivery of services. The team checks to see that the patient forms are completed correctly and helps to correct errors discovered during the course of the visit. The team pays particular attention to the weight gained by children treated at the center, as this has been established as the primary criterion to judge the adequacy of rehydration.

RESULTS

During its first 2.5 months, the PEV/CCCD ORT training team made contact with 40 health centers. Orientation conferences have now been given at 38 of these centers. Follow-up visits have been made at 29 (76 percent) centers where conferences have been held. Three centers where conferences have been conducted have not yet obtained ORS to begin their ORT activities. Eighteen centers have submitted patient forms for evaluation. Analysis of these centers revealed that 13 (72 percent) met the following three criteria: (a) ORT corner well-defined; (b) popular poster and treatment poster appropriately located on the walls; and (c) necessary supplies and equipment on hand. In addition to these very basic criteria, specific characteristics of patient forms were evaluated. The problems most frequently encountered were inadequate weight gains among cases treated and failure to report discharge status on the clinical form.

SUMMARY OF PROBLEMS ENCOUNTERED AND RECOMMENDATIONS

The most frequently encountered problems during the course of the first three months of the ORT training team in Kinshasa included the following:

1. Difficulty with the first (contact) visit.

   RECOMMENDATION: The ORT training team should clearly introduce themselves, including their names, description of their professional qualifications (nurses, physicians, etc.), and the purpose of their visit. They should speak to the person responsible for the center to arrange a date for the orientation conference.

2. Too many patients at the center at the scheduled time for the orientation conference.

   RECOMMENDATION: Arrange a more convenient time for this conference.

3. Fatigue on the part of health center personnel at orientation conferences.

   RECOMMENDATION: Make conferences dynamic, and pose questions to personnel, rather than delivering a purely didactic presentation.

4. Treatment plan chosen incorrectly.

   RECOMMENDATION: Clearly explain the basis for selecting the treatment plan (A,B,C), and use the patient form to help reinforce this knowledge more practically.

5. Quantity of fluids calculated incorrectly.

   RECOMMENDATION: Redo the calculation with health center personnel, demonstrating the proper methods for determining the quantity prescribed.

6. Inadequate quantity of fluids administered.

   RECOMMENDATION: Encourage personnel to give more fluid than the quantity prescribed, and insist that the children regain the estimated weight lost (through dehydration) before leaving the center.

7. Reluctance to give ORS to patients who vomit.

   RECOMMENDATION: Explain that ORS can often be continued in the presence of vomiting, and should be given in small quantities and controlled carefully so that vomiting is not excessive.

8. Lack of understanding of the importance of regaining estimated weight loss during the course of rehydration at the center.

   RECOMMENDATION: Explain again the principle underlying this recommendation, i.e., that rehydration should be "complete" before the child leaves the center, and that the best way to ascertain this is to insist that the child regain (in grams) the estimated quantity lost (in milliliters).

9. Improper weighing of children--due either to faulty scale and/or improper weighing practices.

   RECOMMENDATION: Try to ascertain if the weighing scale is adequate, and train health personnel in proper weighing techniques if necessary.

10. Overall lack of understanding of principles and procedures related to ORT.

    RECOMMENDATION: Give another orientation conference to reinforce both theoretical and practical aspects of ORT, focussing particularly on problems found at the center.

11. Lack of motivation on the part of health center personnel.

    RECOMMENDATION: Encourage them to continue ORT activities, and explain that ORT is less time consuming and less difficult for them than other treatment alternatives.

12. Refusal on the part of mothers to stay at the center for treatment.

    RECOMMENDATION: Health center personnel should explain to mothers why children should be treated on-the-spot, i.e., that complete rehydration is important. (Mothers should continue treatment at home at the stage of maintenance rather than at the stage of rehydration itself.) Personnel should use the time at the center to conduct appropriate health education sessions to teach mothers the "four rules for treatment of diarrhea at home" and maintenance therapy following the current rehydration.

13. Lack of regular supply of ORS.

    RECOMMENDATION: Advise center to place orders to renew their ORS stock well in advance, to assure that ORS is continuously available at the center.

DEVELOPMENT AND MANAGEMENT OF CONTROL OF DIARRHEAL DISEASE/ORT PROGRAM IN ZAMBIA

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Diarrheal disease continues to be one of the most important causes of morbidity and mortality in our regions, annually killing up to five million young children. The primary cause of these deaths is dehydration. Loss of appetite, decreased absorption and withholding food during diarrhea episodes contribute greatly to malnutrition in children and place a tremendous economic burden on the health care system.

The control of diarrheal disease will require a long-term effort by health care providers. To be effective, this effort will have to be adequately planned and evaluated.

ZAMBIAN SITUATION

Diarrhea is one of the most critical health problems in Zambia and is a leading cause of morbidity and mortality in children under five years of age; i.e., in nearly 19 percent of the total population. Fifty-two of our 57 districts identified diarrheal diseases as one of the major health problems in their district. Diarrhea accounted for nearly 13.5 percent of total admissions, 19.2 percent of outpatient visits, and 13.2 percent of deaths in rural health centers during 1982. It was also responsible for 7.8 percent of total admissions, 17.3 percent of outpatient visits, and 8.6 percent of hospital admissions. The figures are much higher and more frightening when compared to the target age group.

Our challenge is to prevent this death and suffering through oral rehydration, a cheap, effective and acceptable treatment. Of course, the value of improved nutrition and immunization also should not be ignored.

Diarrhea Outpatient Attendances Among Children Under 15 Years in Hospitals and Health Centers

Year	Cases Treated	Percent of Total Attendances
1978	670,067	11.9
1979	672,902	11.8
1980	748,502	11.9
1981	777,613	11.6
1982	828,348	12.8

ORT ACTIVITIES

In 1976, with the introduction of the Immunization Program, the teaching of homebased sugar and salt solution was introduced at all health service points and in all health activities. A health education booklet on diarrhea was also produced and distributed widely. Diarrhea was included in the How to Keep Healthy booklet mainly intended for primary school teachers. Since 1980, an integrated approach in the provision of health services in the areas of eight elements of Primary Health Care has been the main thrust. As a result, this teaching was integrated with the implementation of the Primary Health Care Program (PHC) in Zambia.

Surveys have shown that mothers have a good understanding of the oral rehydration methods, but the frequent unavailability of sugar and salt in homes has made the use of ORT irregular and, hence, of little consequence. Mothers are still reluctant to regard this method as an essential medical treatment. To them, ORT is not a medicine. In the nine health sectors, a prepared rehydration solution is being dispensed from all hospitals and clinics, and this method has been more effective.

CURRENT CONTROL OF THE DIARRHEAL DISEASE PROGRAM

On the basis of the above information, Zambia, in conjunction with other nations in the region, has started a CDD Program with joint WHO/UNICEF cooperation, as part of its primary health care. The objective of the CDD programs are to reduce the mortality and morbidity from diarrheal disease, especially in children under five years of age, so that diarrheal disease ceases to be a major health problem in the country; to integrate CDD activities into the general health services; and to increase efforts for community participation.

To meet these objectives, the following activities have been undertaken:

1. Staff Training

   (a) Four senior national staff have undergone training at the managers level, two in Bangkok and two in Zimbabwe. One staff member has been appointed as a Control Diarrheal Disease Program Manager at the national level to coordinate all activities.

   (b) In January 1984, ten course facilitators were trained for the supervisory skill course.

   (c) In mid-1984, seventy-five staff from the province and district levels were trained in mid-level supervisory skills.

   (d) Over 700 rural health center staff working throughout the country were trained in supervisory skills. Staff teaching training included personnel involved in the training of community health workers and traditional birth attendants who operate in the villages.

(e) By the end of 1986, all staff members in rural areas, old and new community health workers, traditional birth attendants, and some community leaders will also be trained. This will be done through the orientation, reorientation and training seminars held under the auspices of the PHC implementation program.

2. Delivery Services

Presently, all our oral rehydration solution supplies are imported, both in the government and the private sector. The supplies to the health sector comes through UNICEF. Over 500,000 packets have been distributed to the health facilities throughout the country. One million more packets should be received from UNICEF in 1985. 4,000 pre-packed drug boxes, each with 50 ORS sachets, are also expected to arrive soon. These boxes will go to Community Health Workers and should ensure the availability of ORS at the village level.

The present system of drug distribution will be utilized in our program. This system consists of supplying drugs directly to 57 districts and, in turn, to each rural health center and then to the community. At the district and rural health center level, transportation is a constraint. With GRZ/WHO/UNICEF cooperation, plans for the establishment of local ORS production are in an advanced stage. Machinery will be arriving soon and General Pharmaceuticals Limited in Kabwe will be responsible for production. A local name, "madzi a ya moyo," has been approved by the Oral Rehydration Solution Committee.

Material for the initial production of a million polythene sachets using "sodium citrate" for 750 ml size is part and parcel of the agreement. 5000 polythene jugs (750 ml) have been ordered, and will be used in a massive education/information campaign. There is no nationally available container equivalent to one liter, hence the change to 750 ml, which is equivalent to three soft drinks, two beer bottles, or one mzoe bottle, all of which are widely available and recognized. The use of the locally-made polythene pack will reduce the cost of packing six-fold.

3. Educational Materials

(a) In addition to the training, a national competition was held to select a local name and logo for the local ORS product. During the period of the competition, many articles were published in the national newspapers. CDD has also been included in the regular radio programs broadcast in the local languages.

(b) Over 3000 of 5000 assessment and treatment charts printed locally have been distributed.

(c) Information included in the packets written in the local languages, together with pictorial demonstrations on mixing and use of ORS, are in the trial stages of completion.

(d) Home treatment cards have been ordered for issuance to the community. These are also written in local languages.

(e) 5000 polythene jugs (750 ml) for demonstration purposes have also been ordered through UNICEF.

(f) A special position paper on "Nutrition and Diarrhea" was published in 1983 and is being reprinted this year. In the past two years, the health magazine entitled Bwino has had articles on the control of diarrhea.

4. Data Collection

(a) Weekly data on diarrhea returns have been collected in Zambia, and this data collection will be further strengthened.

(b) Monthly record keeping on the use of ORS has been introduced to monitor the requirements and extent of use of ORS.

(c) Special attention has been paid during training to the monitoring and evaluation of usage.

(d) Diarrheal disease is part of the routine data collection at all levels.

The most important aspect of data collection is its interpretation and use at the level of collection. This was emphasized in all of our training courses.

5. Budget

During 1984, the following financial allocations were made:

GRZ	-	K360,000
UNICEF	-	$ 32,200 (Training)
		$100,000 (Production)

6. Pilot Project

A special pilot project has been started in the Mwachisompola Demonstration Zone to assess the acceptability and usage of ORS by the rural community. This pilot project will be evaluated at the end of April 1985.

7. Interrelated Areas

(a) Appropriate feeding and extensive use of ORS in management of diarrhea is advocated at all levels.

(b) Improving mother and child nutrition, promoting breastfeeding and ensuring appropriate immunization is also emphasized.

Survey Results - April 1984

Nutrition Status

Age	Percent Having Malnutrition	
	Lusaka N = 139	Rest of the Country N = 392
0-11	16	32
12-23	23	33
24-35	14	21
36-47	12	20
48-59	--	17

Immunization Coverage (12-23 months)

Area	N	% with Cards	BCG	Measles	Fully Immunized
Lusaka	206	89	83(72)	62	51
Rest of Country	204	80	82(68)	55	35

	Lusaka	Rest of Country
Mothers who can recognize ORS packet	48%	21%
Mothers who have used ORS	30%	15%
Mothers examined by Trained Health Worker/TBA during pregnancy	69%	85%
Children breastfed up to 12 months	87%	93%
Children started on solids at 4 months	66%	56%
Health Centers having and using ORS	--	28%

(c) As part of IDWSSD, special emphasis is placed on improving environmental health practices.

- VIP have been constructed in Lusaka rural, Luapula, Northern and Central Provinces. This would be extended to cover the entire country.

- Plans for the improvement and provision of safe water supply are also underway through various bilateral agreements throughout the country with AWHO, SIDA, NORAD, CIDA GTZ, AFRICARE, Save the Children, etc.

(d) Various seminars on epidemic controls (cholera) have taken place in the country.

Health education plays a primary role in all the components mentioned above.

8. Evaluation

The need for and importance of evaluation have been recognized from the very beginning. As a result, the monitoring of performance and the monitoring and evaluation of usage have been included in all our training courses.

9. Constraints

Although we are following the general plan recommended by WHO, we still do not have a detailed implementation plan. We urgently need to develop one. In addition, the managerial abilities at the District levels are weak. Other constraints include:

- Medical professionals' attitudes about the use of ORS rather than IV fluids in treatment of dehydration, and mothers' attitudes about feeding practices;

- The quality and quantity of food in seventy draught-affected areas;

- Change from liter to 750 ml size packs;

- The delivery and distribution of ORS to health centers and the community (transportation is a major constraint);

- Training of health workers, community workers, and mothers to prepare and administer ORS;

- Continuous supply of raw materials for ORS after expiration of present arrangements.

APPENDIX E

AFRICA REGIONAL ORT CONFERENCE*

LILONGWE, MALAWI

MARCH 29-30, 1985

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* This list includes the participants to the Second Annual CCCD Consultative Meeting, Lilongwe, Malawi, March 25-28, 1985.

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