EVALUATION OF THE PAKISTAN

NATIONAL ORAL REHYDRATION PROGRAM

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Executive Summary

At the request of the Government of Pakistan, the United States Agency for International Development sponsored a consultant team from April 29 to May 20, 1984 to review the current Pakistani Oral Rehydration Therapy (ORT) Program and to recommend ways of rapidly expanding the use of ORT in Pakistan. Information on the ORT Program was obtained through visits to urban and rural health facilities in 3 provinces, interviews with pharmaceutical, media and marketing professionals, as well as with government and private health care providers and consumers. Four general impressions were especially striking to the team members:

- The immediate need for a full-time ORT manager.
- The impressive infrastructure already in place to produce packets and to carry out training programs but an inadequate promotion strategy to stimulate appropriate utilization of supplies and an under-utilized training structure.
- The inadequacy of the present surveillance system to supply basic data for evaluation and management of the program.
- The Government of Pakistan should continue its support of the ORT Program beyond 1985.

The team members were asked to review 6 areas of the ORT Program: constraints preventing ORS use, actions required to achieve widespread use, private sector potential, distribution and marketing, assessment of production and distribution capacity, and surveillance system. Constraints preventing use of ORT include:

- the lack of a full-time ORT manager,
- lack of information for users,
- insufficient support from the medical profession,
- inadequate access to users by paramedics,
- limited experience of health education system,
- low usage rate of government health facilities,
- widespread use of antidiarrheal agents and antibiotics to treat diarrhea,
- the quantity of ORT required,
- the quality of ORS produced,
- lack of involvement of traditional healers in the ORT program,
- ineffective epidemiologic surveillance system,

- the lack of standard instructions on ORT mixing and administration.

Actions required to achieve widespread use include:

- selecting a full-time manager,
- aggressive marketing to increase use of existing packets,
- monitoring the quality of ORS produced,
- improving the surveillance system and selecting a standard ORT volume for preparation and administration.

Private sector potential, distribution and marketing and the public and private production capacity are all greater than anticipated:

- 5 private pharmaceutical companies are producing ORS packets with an estimated output of 25 to 30 million 1 liter packets in 1984,
- the federal government plans to produce 5 million 1/2 liter packets in 1984.

The surveillance system, on the other hand:

- cannot provide timely data for effective management of the program,
- urgently needs simplification.

The consulting team was also asked to develop realistic implementation plans, strategies and recommendations for: mass media education and demand creation; public and private sector management; training, retraining and supervision; indicators for measuring progress; and evaluation and research. The team made the following recommendations:

Mass Media education and demand creation:

- marketing of existing packets through a generic campaign on ORS importance and use for the 1985 diarrheal season,
- development of sugar/salt home formula to complement packet use,
- incorporation of traditional healers as potential providers for ORS advice,
- selection of private marketing firm to develop and conduct generic campaign.

Public and private sector management:

- more stringent licensing procedures,
- increased surveillance of manufacturing,
- increased frequency of testing of ORS.

Training, retraining and supervision:

- emphasize actual rehydration of children,
- focus supervision on a few major targets.

Indicators for measuring progress:

- simplify the present reporting system,
- utilize the Baseline Health Status survey,
- monitor use of ORS packets.

Evaluation and research:

- select a full-time manager for the national program,
- select full-time provincial and district supervisors,
- monitor performance of staff in meeting specific objectives,
- initiate operational research studies for promotional/educational campaign.

INTRODUCTION

Diarrheal disease continues to be one of the major health problems for Pakistan's 94 million people (estimated mid-1983 population) and especially for the 17 million Pakistani children less than 5 years of age (1). Although accurate surveillance figures for infectious illnesses are not available, diarrhea and respiratory diseases (including measles) are probably the two leading causes of death in children less than 5 years old in Pakistan (2,3). No prospective village studies of the incidence of diarrhea are available but prevalence surveys indicate that children less than 5 years old have 4 to 6 episodes of diarrhea per year (4,5). The mortality rate for children less than 5 years old in Pakistan is estimated to be about 29 per 1000 live births; however, this figure is felt to reflect a large degree of under reporting of deaths (5). By assuming that 40% of these deaths are caused by diarrhea, an estimated total of 200,000 children die each year in Pakistan from this cause.

The impact of diarrheal disease is also indirectly reflected by the incidence of malnutrition. Sixty percent of 1,260 Pakistani children surveyed in 1982 had first, second, or third degree malnutrition (6) and 67% percent of 4,971 children surveyed in 1984 had first, second or third degree malnutrition by the Gomez Classification (4). The rates for second and third degree malnutrition were 2 to 3 times higher in rural areas of Sind and Baluchistan Provinces as compared to urban Sind or urban or rural Punjab province (4), emphasizing the significant differences between urban (29% of the population) and rural (71%) areas and between provinces.

To deal with these and other health problems and the relative maldistribution of services to urban and rural areas, the Ministry of Health and Social Welfare (MOHSW) established the Basic Health System in 1974 to link health care in village communities to the government hospital system (Tehsil, District, and Teaching Hospitals). The establishment of facilities, rural health centers (RHC's) and basic health units (BHU's) is nearly completed but the implementation of programs has moved more slowly (2). In 1975 an estimated 17% of the population received their primary health care at government health facilities with the remainder receiving care in about equal numbers from the indigenous medical system (hakims and vedics) and the private medical community (2). Major health policy decisions are made by the Federal Government and implementation is left primarily to the Provinces under the Provincial Secretary and Director General of Health. At the District level, the District Health Officer (DHO) has, on paper, the responsibility for coordinating all of the health programs, distributing supplies, collecting data, and evaluating performance.

The MOHSW instituted a Diarrheal Disease Control Program in 1982 to combat the problem of diarrheal disease by emphasizing the use of oral rehydration salts (ORS). The use of ORS actually began in Pakistan in 1971 at the Civil Hospital, Karachi, and UNICEF supplies began in 1975. Realizing that more concentrated efforts were required in this and other areas of child health, the MOHSW established the Accelerated Health Program (AHP) in 1982 comprised of 3 activities: a) diarrheal disease control emphasizing production and distribution of ORS; b) an expanded

program of immunization (EPI); and, c) training of traditional birth attendants (TBAs). Active program implementation began in January 1983 and will continue for at least 1-1/2 more years under the Sixth Five-Year Plan (1983-1988). The AHP has emphasized the EPI component to date as indicated by the 1983-84 AHP budget: EPI - 80%, ORS - 10%, TBAs - 10%. AHP impact in the EPI component is reflected in the increase of the annual immunization coverage from 2 to 4% of children under 5 years old in 1982 and 1983, and to 20% of children under 2 in 1983. (Dr. Witjaksono Hardjotango, WHO EPI Coordinator for the Government of Pakistan, personal communication.)

Under the AHP, the oral rehydration activities have been assigned to the National Institute of Health (NIH, production and distribution) and the Health Education Cell of the Basic Health Services Unit (education and promotion) and are coordinated by the Director of the NIH, General M. I. Burney. Since the inception of the AHP, the government supply for ORS packets has increased from 5 million in 1983 to 17 million (proposed) in 1984 and the development of media programs and training materials has begun. Despite the efforts of the AHP, ORS is used in only about 10% of episodes of diarrhea (1, 4) and IV therapy, antidiarrheal agents, and antibiotics remain the cornerstone of treatment in most government hospitals (personal observation).

The organization of this report corresponds to the scope of work presented to the consulting team. We were asked to review 6 components of the present ORT program and based on that data, to develop plans, strategies and recommendations concerning 5 activities.

I. EVALUATION OF CURRENT ORT ACTIVITIES:

1. The constraints preventing ORS use.
2. The actions required to achieve widespread use.
3. The private sector potential.
4. Distribution and marketing.
5. Assessment of production and distribution capacity.
6. The effectiveness of the current disease surveillance system.

II. Develop realistic implementation plans, strategies and recommendations for:

1. A mass media campaign.
2. Public sector management of ORS production (including planning, logistics, pharmaceuticals, and evaluation).
3. Training and Supervision.
4. Indicators for measuring progress.
5. Evaluation and Research.

I.1. CONSTRAINTS PREVENTING ORS USE

The major constraints preventing ORS use at present appear to be a) lack of full-time management of the ORS campaign, b) limited promotional and public education activities, and c) inadequate surveillance.

I.1.1. Constraints

Lack of a full-time manager

To date, no full-time manager has been named to coordinate and implement the national ORT program activities. In addition, no full-time supervisory and managerial staff have been assigned at the provincial, divisional, or district level. Decisions regarding ORT are made by General Burney, the director of the National Institute of Health, with assistance from a national ORT committee comprised of representatives from pediatric teaching hospitals, the Ministry of Health and several donor agencies including WHO, UNICEF, and USAID. Day-to-day implementation of ORT program activities has been assigned to staff already responsible for other major tasks such as EPI coordination or supervision of all aspects of provincial or district public health programs.

I.1.2 Lack of Information for Users

Except in isolated instances where effective education and information programs exist within health care units, especially in urban hospitals, the primary target population (women with children less than 5 years) is unaware of the benefits of ORS. Existing health care facilities serve only a small percentage of the population, by some estimates as low as 17 percent (2). The rural population is particularly disadvantaged in receiving modern medical care and information.

Public education programs that have been implemented under the AHP generally serve the urban and educated populations who have access to the print media and a wider range of health care through government and private facilities. Media campaigns for ORS, especially television and radio messages, have been initiated but have not yet created the demand for ORS on the part of the general public. The lack of information by the general public, particularly the more isolated rural poor, is the single most significant constraint preventing ORS use.

A recent survey by the PPHC Project indicates that no more than 40% of the women had heard of ORS and only 10% were actually treating diarrhea with some formulation of ORS (5). With very low literacy rates among rural women, information about ORS is communicated in face-to-face situations at the RHCs, BHUs, and through Community Health Workers.

I.1.3 Insufficient Support from the Medical Profession

There are many strong advocates of ORS among the medical profession. Several have been instrumental in gaining support for ORS as a health strategy in Pakistan. Some have established significant ORS programs within their own health care facilities and have trained others to make use of ORS. Nevertheless, the orientation and training of medical officers has at this point not been sufficient to ensure their support for a mass campaign for ORS. The Regional Training Center for Diarrheal Diseases Control (WHO) established in 1979 at Children's Division of King Edward Medical College and Mayo Hospital in Lahore trains a limited number of doctors in its programs. One of two training facilities for medical officers, it has trained 600 doctors up to the present time. This is only a small proportion of the number of doctors who work in government facilities and does not take into account the growing number of doctors in private practice throughout the country.

Doctors continue to prescribe antidiarrheal drugs and antibiotics for routine diarrhea but these drugs have not been shown to be of benefit. Even doctors oriented to ORS frequently give drugs along with ORS, stating that patients demand it.

I.1.4 Inadequate Access to Users by Paramedics

Outreach activities are especially difficult for female paramedics to carry out. The intended structure for this input was the training of female Medical Technicians (MTs) who would work with mothers at the RHCs and BHUs and would, as well, train Community Health Workers within the villages. Although in some cases this has happened, there remain

difficult probleus in recruiting female MTs. Those who have been included in the program have difficulty in traveling to villages to contact their female Community Health Workers.

These constraints limit the effectiveness of female paramedics since potential user/patients do not have ready access to their services.

I.1.5 Low usage of government health facilities

The low percentage of people who make use of the government health facilities is the result of a number of factors. Some of these problems are being addressed by UNICEF, the AHC program, and the AID PPHC project.

In a survey of families in the PPHC project, two reasons given for not going to the RHCs and BHUs reflect problems that are not likely to change quickly. One was the distance from the health units and the inconvenience of getting there. The other was the cost of getting to the centers. In personal discussion with a very few villagers, the cost of medicine was also cited as one reason for not going to doctors in general.

Even though health care at government facilities is free, the incidental costs and the inconvenience still remain problems.

I.1.6 Limited Experience in Health Education

The Sixth Five-Year Plan incorporates health education as an essential element of health services. Currently the cadre of health educators is being expanded at the Division and District levels. Out of the 25 professional health educators now employed, only six have a professional degree or diploma in health education (8).

Under the current scheme, health educators are being asked to perform services which for many are beyond their training, experience, and interest. Specifically, they are being asked to be media specialists before they have become educators. Making effective use of media such as posters, pamphlets, newspaper advertisements, and radio messages requires a mass audience can best learn new information and skills, change attitudes and behavior.

An in-service training course organized in collaboration with UNICEF was held in early 1984. A number of other activities, including development of audio visual and mass media materials in support of ORS, are adding to the ability of health educators to develop and conduct public education programs. The Canadian International Development Agency (CIDA) is planning to add an advisor in health education by October 1984, but this individual will focus on EPI and long-term improvements in the health education system.

ORS presents a special challenge to the new health education units due to the importance of home diagnosis, mixing, administration and monitoring which is required. This coupled with the urgency of increased correct usage argues against the existing system capacity to fulfill these needs alone.

At the present time, the health education system is poorly equipped to carry out a mass promotion campaign for ORS. A program designed to educate the widest possible audience within the short time available requires a comprehensive and integrated channel strategy tailored to the needs of the Pakistan rural population. There is little indication that provincial, division and district health education units can conduct such a campaign without additional assistance.

I.1.7 Widespread use of antidiarrheal agents and antibiotics to treat diarrhea

The well-established treatments for diarrhea in Pakistan include suspensions containing kaolin and pectin which are readily available as home remedies, mixtures or tablets containing sulphonamides, antibiotics and anti-parasitic agents and antispasmodics which have been shown to be ineffective in common diarrheal disease. These are widely prescribed by physicians, probably widely recommended by pharmacists and other vendors of drugs and frequently self-prescribed by laymen. Prices of such remedies are generally in the range of 8 to 12 rupees and so are more attractive sales propositions to the vendor than a packet of ORS costing 3 rupees or less.

I.1.8 The quantity of ORT required

The population of Pakistan is estimated to be 94 million (1983) including almost 17 million children less than 5 years old (1). The average Pakistani child has 4 to 6 episodes of diarrhea per year (2, 3) and 2 of these episodes may be serious. Assuming 1 liter of ORS per serious episode for children less than 1 year old (Table I.1.8) and 2 liters of ORS for children 1 to 4 years old, the total volume of ORS needed annually would be:

< 1 yr : 3.4 million x 2 episodes x 1 liter = 6.8 million liters
1-4 yr : 13.6 million x 2 episodes x 2 liters = 54.5 million liters
Total .. 61.3 million liters

To achieve the National Diarrheal Disease Control Program objective of reducing mortality due to diarrhea by at least 35%, then 50% of children less than 5 years old with diarrhea would need to receive effective treatment. Fifty percent coverage of this population would require packets equivalent to 30 million liters initially.

I.1.9 Quality of ORS Produced

Some government health officials, doctors, and druggists interviewed by us have received complaints about deterioration of ORS packet contents. This deterioration has been manifested by discoloration and "caking." Although these changes may not indicate significant alteration in ORS effectiveness, the consumer may lose confidence in the product and decline to use it.

The quality control measures of the pharmaceutical companies vary. The federal government is monitoring the quality of ORS packets by testing selected batches for composition and purity at the National Institute of Health, inspecting manufacturing operations and by requiring information on composition and production processes prior to awarding licenses.

I.1.10 Lack of involvement of traditional healers in the ORT program

Since as many as 65% of Pakistanis use traditional medicine at some time (3), involvement of the traditional healers could greatly increase the coverage of the ORT program. The government's current efforts in this field are limited to training traditional birth attendants (TBAs) as part of the AHP; a portion of their training includes instruction on ORS.

I.1.11 Ineffective epidemiologic surveillance system

The current epidemiologic surveillance system cannot provide meaningful data about the incidence of diarrheal disease, the use of ORS per episode, or the outcome of treatment. The system does not provide data on seasonality of disease or occurrence of epidemics, information essential to decisions about distribution of ORS (see Section 6).

I.1.12 Lack of standard instructions on ORT mixing and administration

At the present time, two different packet sizes of ORS exist in Pakistan. The federal government is producing 1/2 liter packets at the NIH while the pharmaceutical companies which the government licences are producing mainly 1 liter packets. The message about the volume of home-made solutions is presently being given in terms of liters or seers (about 1 liter). As of yet, no wide-scale studies have been done to determine whether consumers are more likely to use or prefer the liter or seer (or pao, 1/4 seer) measurement and whether they can accurately measure that volume.

No educational program is now in place to instruct mothers on how much volume of ORS to give, how to administer ORS during vomiting, or how to determine when a child requires medical attention. Efforts to encourage feeding during a diarrheal episode are just beginning.

I.2 ACTIONS REQUIRED TO ACHIEVE WIDESPREAD USE

Perhaps the team's most dramatic finding was the widespread availability of packets - estimated at some 25 to 30 million (5 million 1/2 liter in the public sector and some 20 to 25 million liter packets in the private sector) in Pakistan in 1984. This coupled with the Westinghouse finding that only 10% of women were using ORS makes a strong case that a widespread promotion of existing ORS supplies could improve coverage dramatically.

Promotion alone is not enough. Users must believe ORS works, know how to mix it correctly, learn how much to give, and then monitor their child's progress to ensure the medication is working.

I.2.1 User Demand

The development of a strategy for creating user demand for ORS is a more complex problem than an EPI campaign for example. Although EPI is a difficult administrative undertaking, the patient role is simply to be available and willing, the individual patient once innoculated is protected for all time and the results of the program are measurable with respect to the numbers of children protected.

Increasing the use of ORS is educationally much more difficult. Although diarrhea bouts may be common and frequent, especially in diarrhea seasons, part of the education campaign must be carried out in the absence of specific instances of diarrhea. In some cases ORT is simply a plan of action. While direct face-to-face education may occur during an episode, this is rare.

Experience in Latin America and Africa shows conclusively that a comprehensive mass education campaign, with special emphasis on the unserved rural population, can dramatically increase demand. Such campaigns can also help teach new skills such as mixing, administration, and monitoring.

This is not to say that the ongoing face-to-face programs should be discontinued. Direct interaction between user and health care provider is essential in bringing about lasting behavioral changes on the part of the user. But at present these programs are reaching too few children suffering and dying from diarrhea. The role of a multi-media campaign is to complement and rapidly expand their effectiveness.

I.2.2 Health Educators

If the Health Educators are to become effective resources for the improvement of health services in Pakistan, they will require additional education and training. A general strategy for the professionalization of the health educators is beyond the scope of these observations, but we strongly urge that a comprehensive plan for the recruitment and training of health educators be developed and that adequate resources for their support be budgeted.

The immediate problem is to expand coverage rapidly. To accomplish this goal it may be necessary to supplement existing health education staff with assistance from a highly experienced Pakistani advertising/marketing agency. The agency's role would be to guide and advise the health director, helping to plan a comprehensive campaign, prepare and test materials, and place media. The cost of such assistance is fully justified by the difficulty and urgency of the problem.

Expatriate assistance should be limited to 12 p/m of assistance, focused on direct experience with ORT promotion through the media. Other short term assistance in market and audience research is available now in Pakistan.

I.2.3 Medical Officers

The support of the medical profession is crucial to the success of any public education campaign. It must not appear that the public education campaign is circumventing the profession in going directly to the public in encouraging the use of ORS packets or in the preparation of a home-made solution.

Probably the most effective medium for training doctors is the face-to-face training programs typified by the Regional Center for Disease Control in Lahore. The combination of a solid scientific basis for ORT along with the hands-on experience of working with children suffering from dehydration is the most convincing argument for its own use. We would strongly urge continued government support for the Regional Training Center for Disease Control as a model.

Other approaches may be necessary for private physicians who are not associated with government health facilities. Use of the traditional professional news letters and journals and association meetings would be the most economical and probably the best approach. This should not be left completely to chance, however. There should be a strategy developed to reach the private physicians, now about 12 percent of the total, through such professional organs and a campaign to meet these educational objectives should be mounted by the Health Education Division. Only the most credible physicians should be used as spokespersons with this group.

I.2.4 Paramedical Professionals

In general, the system of paramedical professionals, particularly the MTs and the Community Health Workers, would seem to offer optimum opportunity for direct and practical education of parents or other family members who attend the child with diarrhea. In practice, however, the lack of trained MTs and the inability of female MTs to participate fully in the infrastructure is a serious handicap in the diffusion of information about ORS.

In speaking with MTs in the limited number of RHCs and BHUs we visited, the knowledge and practices conveyed by them appeared to be generally adequate. Certainly some form of follow-up would be useful to determine where gaps in their training have occurred and to revise what they have misunderstood or forgotten. The system seems to be working, to the extent that we could observe, in terms of their training and knowledge. It does not seem to be working with respect to outreach to the village level. Few of the MTs actually get out into the villages. Community Health Workers, who are volunteers and most often employed in other jobs during the day, must travel to the health facilities in order to speak to the MT.

If the paramedics are to become effective trainers in ORT for the rural population, they must have regular and ongoing access to the users of ORS. They cannot sit in isolation at the RHCs and BHUs waiting for the patients to come to them. As indicated earlier, for a variety of reasons few go to one of the health facilities. Leaving diagnosis and treatment in the hands of the CHWs leaves open the largest risk of error since they are the least trained link in the health care chain. Other

patterns for the training and use of female MTs in particular need to be developed. One pattern which might be experimented with in conjunction with the ORT campaign could be the development of self-instructional modules to be taught on the Open University pattern. A combination of print and audio cassettes might provide the basic instruction and a correspondence component could assure mastery of the information.

I.2.5 Home-Prepared Solutions

The use of a home-prepared solution would serve to augment other strategies for widespread use of ORS. The preparation of such solutions is currently being taught in many health facilities. They seem to serve two major purposes. First, they provide emergency treatment in the home until the family is able to travel to a health care unit. Second, they may provide treatment for those families who cannot or will not attend the health facilities. In the latter case, it is unlikely that such people have access to information about the home-made solution unless there is an active CHW in the village. For this reason, a public education campaign should continue to provide information on the preparation and administration of a home-made solution. Greater emphasis should be placed on a standardized formula and uniform measurements that are easily taught through the mass media.

I.3 PRIVATE SECTOR POTENTIAL

To assess private sector potential, the ORS production consultant had discussions with directors of 10 pharmaceutical manufacturing companies in Karachi and Lahore and visited the production facilities of 7 of these companies. The comments that are made on individual companies represent the consultant's impression arising from discussion and observations. Whilst some searching questions were posed and some production processes and records were observed, the production units were not subjected to a true inspection such as only the government pharmaceutical inspectorate may carry out. Thus the comments are offered confidentially for the guidance of the health authority.

A commentary on current and planned activities in the ORS field by individual companies follows:

I.3.1 Ciba-Geigy, Karachi

Currently Ciba-Geigy does not manufacture ORS in Pakistan, nor does it have the required space to introduce manufacture of this product during the next 2 to 3 years. It has applied for licenses to import two products, (i) ORS packets and (ii) ORS effervescent tablets. The first application was not approved but a further application for these two products is being submitted.

I.3.2 Lahore Chemical and Pharmaceutical Works Ltd, Lahore

LCPW is one of the larger and more advanced of the local companies. The impression is of very strong management, a keen awareness of the problems and a vigorous policy of production. The company was already producing sachets to meet an order for 5 million x 1 liter packs for the

Ministry of Health. A further order for 10 million was expected subject lo prompt delivery of the first order. Production had just been transferred to new premises which could be kept open to permit 3 working shifts. Production was large scale - a mixer of capacity 500 kg was employed. A packet filling machine was operating at about 5000 packets per hour. Two further packing machines were on order.

I.3.3 Fakma Pharma, Lahore

This company is small to medium by Pakistani standards. It has been producing oral rehydration salts since 1979 and was the first company in the ORS field in Pakistan. Output has risen from about 100,000 in 1979 to 2.5 million x 1 liter packets in 1983. The anticipated production is 5 million x 1 liter packets in 1984.

The problem of product stability has been addressed previously by packing the inorganic components in one polythene packet and the glucose separately in another. Both packets were packed together in an outer paper envelope bearing the directions for use and dosage. Now, this twin-pack is not considered necessary due to improved control of humidity in the packaging operation and to the use of anhydrous dextrose which was not formerly available in Pakistan. Packaging is being improved.

Appreciation of the code of good manufacturing practices did not appear to be a strong point. The manufacturing operation was dustier than need be. There was no evidence of records of manufacturing operations, quality control, or product output.

I.3.4 Star Laboratories Ltd, Lahore

This is a small to medium sized company by Pakistan standards which had the government contract for ORS production in 1983. Both 1 liter and 1/2 liter packets are produced but the demand is mainly for the former. Currently, 3 packet filling machines are producing 1 liter packs and one machine is producing 1/2 liter packs.

I.3.5 Geofman Pharmaceuticals, Karachi

This is one of the larger local pharmaceutical manufacturers. Currently there is no manufacture of oral rehydration salts but plans to start ORS production in June 1984. Capacity will be 30,000 in a 6-hour day. This production is intended for private sector consumption. A dehumidified room was being prepared.

I.3.6 Hamdard Foundation (Waqf), Karachi

This non-profit company (Wafq) specializes in the manufacture of herbal remedies and has strong religious motivation. No ORS is produced currently and the earliest production start-up would be 18 months.

I.4 DISTRIBUTION IN THE PRIVATE AND PUBLIC SECTOR

The general pattern of distribution of drugs in the private sector is through independant wholesalers. Thus, one international company had

contracts with 24 wholesalers throughout the country. A major local company listed 17 cities in which wholesalers has been appointed. Manufacture is mainly in Lahore and Karachi. Distribution appears to be nation-wide rather than regional.

Oral rehydration salts are widely available from numerous retail drug stores in the cities and in the villages visited by the team (Table I.4). Supplies may be delivered by the wholesaler to the retailer in the cities but retailers located far from the cities may have to collect their own supplies.

Oral rehydration salts along with other drugs are distributed from provincial depots in Quetta, Peshawar, Karachi and Lahore. Supplies depots obtain supplies from (i) NIH Islamabad, (ii) UNICEF, (iii) local manufacturers. (UNICEF has provided 3 million sachets during 1983-84.)

ORS and drugs are distributed from these depots to hospitals, District Health Officers, armed forces bases via depot vehicles. Smaller units such as rural health centers obtain their supplies from DHOs, generally making their own arrangements for collection.

I.5 ASSESSMENT OF PRODUCTION AND DISTRIBUTION CAPACITY

The standard manufacturing formula referred to here is that approved by WHO. The composition of the solid mixture for the preparation of 1 liter of solution is anhydrous glucose - 20g, NaCl - 3.5g, $NaHCO_3$ - 2.5g, and KCl - 1.5g.

I.5.1 Production of Oral Rehydration Salts

Oral rehydration salts (ORS) are generally presented as 27.5g of mixed powders in a packet intended to produce 1 liter of solution, or as 13.75g of the same mixture in a packet intended to produce 1/2 liter of solution. This apparently simple process presents some problems to the manufacturer. Batches are typically 40kg or more. Powders must have approximately the same particle size distribution if they are to be properly blended so that any individual sample of 27.5g corresponds closely to the composition defined in section I.5. Mixing conditions must be defined and proven to yield a properly blended product. However, stability of the product is the greatest problem facing the manufacturer. If the moisture content of the ingredients is not sufficiently low then there will be interaction between the sodium bicarbonate and glucose leading to discoloration and "caking" of the powder. While the theraputic value of the product may be virtually unchanged, the consumer loses confidence and the "cake" is difficult to dissolve.

Thus it is necessary to start with dry ingredients, minimize the ingress of moisture during processing and filling into packets and to use packets of material that will effectively withstand humid conditions and are properly sealed. The following specification for foil for packet manufacture is recommended by WHO (9): inner layer - polyethylene $50gm/m^2$, middle layer - aluminum 15 u thick, and outer layer - polyester $15g/m^2$.

Some manufacturers have developed products in which one or more of the inorganic components are encapsulated in a film of inert substance which prevents the absorption of moisture and interaction with the glucose. A small proportion of colloidal silicon dioxide (ca 0.02%) may be added to improve the free flowing properties of the powder thus making filling into packets easier. This is also stated to take up residual moisture but it seems doubtful whether such a small proportion of silicon dioxide could have any significant effect.

I.5.2 Manufacturing Facilities and Programme at the National Health Institute, Islamabad

The NIH now has well established facilities for the production of ORS packets. It manufactures in batches of 41.25 kg which is equivalent to 3000 x 13.75g packets, each being equivalent to 1/2 liter of ORS solution. There were problems in the early months of production with both the mixing and filling processes. It seems that these have now been overcome. Another mixer and a second packet filling and sealing machine have been obtained.

Current capacity on single shift operation is stated to be 24,000 packets per day using 2 filling machines. This appears to be a very cautious estimate. It corresponds to an installed capacity of almost 6 million packets per year.

Plans which have been made to introduce double working shifts have been used as the basis for the cost estimation shown in detail in Annex 2.

It was estimated that the cost of sachets would be:

	1/2 liter packet	1 liter packet
Ingredient Cost	Rs 0.193	Rs 0.387
Foil Cost	0.283	0.382
Processing cost including all overhead	0.070	0.084
	Rs 0.546	Rs 0.853

Actual production during the first four months of 1984 was 700,000. Currently 1/2 liter packs are produced at NIH. The machine has the capacity to produce 1 liter packs as well as 1/2 liter packets. Additionally, NIH produces a hospital pack (polythene bag) equivalent to 9 liters.

I.5.3 Manufacturing Facilities and Program in the Private Sector

The data presented here was obtained through:

* reference to records of licensing held by the Drug Control Authority

- discussions with management of 10 companies
- visits to 7 manufacturing units.

Due to limitations of time it was not possible to meet the management of two companies actually producing ORS, i.e. Pharmedic and Soma.

Figures for actual production 1983-84 are those quoted by managements. Figures for 1984-85 are again as quoted by managements and are the sums of quantitites actually produced plus planned/expected production in the year ending 30 September 1984, i.e., by the end of the current diarrhea season.

Installed capacity has been estimated by the pharmaceutical production consultant on the basis of equipment seen to be physically in place and operational. In all cases the limiting factor has been assumed to be the capacity of the packet filling/sealing machine. In all cases the speed of the machine used for the estimation has been the lower end of the range, or the actual rate that has been attained in practice.

It has also been assumed for the purpose of this calculation that machines would operate (single shift) 6 hours per day for 240 days per year.

The concept "installed capacity" is a valuable basis for comparison of units. It is not to be inferred that production units will necessarily achieve their installed capacity as output will vary according to seasonal demand. Indeed, manufacturers may well be pleased to achieve 70% of installed capacity on single shift working. However, it should also be borne in mind that with seasonal 2 or 3 shift working, output may greatly exceed installed (single shift) capacity.

Eight companies are licensed by the Ministry of Health to produce ORS. One company has an application to manufacture under consideration. Another company has an application to import under consideration. Five companies are actually manufacturing now (May 1984). One company plans to start manufacturing in June. Four companies are using the WHO-recommended formula and one is using a different formula. (See Table 5.1)

A further four companies have expressed an interest in manufacturing ORS but have not made application for a license. One company after carrying out product development studies for two years has decided not to enter this field because of the problems of stability.

The data on 10 companies licensed to produce ORS or with applications pending is summarized in Table 5.1.

I.5.4 Pack Size

It has been the policy of the government to encourage the use of the 1/2 liter pack on the grounds that 1 liter of solution will often not be consumed within 24 hours and thus become contaminated under unhygienic conditions of use.

However, by far the majority of packets available in Pakistan are the 1 liter size. These are obtained from UNICEF and local manufacturers.

The costs of manufacture of the two sizes of packet have been estimated on the basis of data supplied by NIH. These studies show that the cost of the 1/2 liter packet is Rs 0.5 and the 1 liter packet is Rs 0.8 respectively - a difference of only Rs 0.3 per packet. Stated in another way, 2 x 1/2 liter packs cost 28% more than 1 x 1 liter pack.

Reference to Table I.1.8 reveals that even a 6 month old child with mild diarrhea needs 1 liter of solution in one day. Thus it seems that in the vast majority of cases 1 liter of solution will be consumed in well under 24 hours. The strong grounds for standardization of a single pack size are given in Section II.1 of this report. The economic evidence shows the clear advantage of the 1 liter pack size.

I.6 THE EFFECTIVENESS OF THE CURRENT DISEASE SURVEILLANCE SYSTEM

The epidemiologic surveillance system outlined in the Pakistan National Control of Diarrheal Disease (CDD) Program document unfortunately is not functioning at this time. The surveillance system currently in place has several deficiencies which prevent it from providing meaningful data on the number of cases of diarrhea seen, the number with dehydration, the number of ORS packets utilized or the number of deaths from diarrhea. Each provincial health official interviewed felt that surveillance and evaluation were two of the major weak links in the Oral Rehydration Program. The major deficiencies in the surveillance system include: a) lack of a uniform definition of diarrhea, b) incomplete data collection and recording, c) inaccurate recording and tabulation of data, d) significant under-reporting of deaths, e) lack of a mechanism to identify epidemics, and f) lack of feedback for data collectors. These deficiencies prevent this surveillance system from providing the information required to evaluate the ORT program.

a. Lack of a uniform definition of diarrhea:

In the outdoor patient registers (OPRs) which varied in form and substance at each of the health facilities we visited, diagnoses for loose motions included "diarrhea," "gastroenteritis" (loose motions plus vomiting), "amebic" and "bacillary dysentary" (although no diagnostic equipment was available at many units) and "fever" (if fever preceeded the loose motions). In the Abstract Register (AR) which is the summary sent to the District Health Officer and then on to the Divisional, Provincial and federal government statistical officer, the entries for loose motions include "cholera," "diarrhea," and "amebic" and "bacillary dysentary." Cases of "gastroenteritis" and "diarrhea with fever" are often listed under the categories "other intestinal disorders" and "fever"

in the AR.

b. Incomplete data collection and recording

No data on episodes of diarrhea were entered in the AR at one teaching hospital and one District Hospital in Karachi because of "lack of manpower." No data is sent to central supervisors on a monthly basis from any facility which we visited; only annual totals are sent. The recording of illness by age is broken down into 2 categories: less than 11 years, and 11 years and greater, rather than the age groupings universally recognized (< 1 yr, 1-4 yr, 5-14 yr, 15+ years). Neither data on degree of dehydration nor number of packets of ORS utilized per episode are recorded.

Data recording lagged also at the provincial level. The most recent provincial AR's available for NWFP and Punjab provinces were 1980 and 1982 respectively. Sind province recorded 112,967 visits for diarrhea in 1983, an average of less than 30 episodes per health facility per year - an unrealistically low figure.

Efforts at consolidating and strengthening the government surveillance system have begun through the Pakistan Primary Health Care Project (a GOP-USAID project). Mr. Shamshad Qureshi has helped design a simplified Outdoor Patient Register and Abstract Register and these are being field tested now in Punjab Province.

c. Inaccurate recording and tabulation of data

Data recording and tabulation are often assigned to the medical technician who receives no specific training for this task. A review of the OPR at one basic health unit for April 1984 revealed 64 patient visits for diarrhea (31), gastroenteritis (20), amebic dysentary (5), and bacillary dysentary (3). In the AR for that month, the totals were diarrhea (19), amebic dysentary (14) and bacillary dysentary(5). These results also emphasize that the present system does not accurately reflect the number of patients presenting with loose motions.

d. Significant under-reporting of deaths

The number of deaths recorded by the present system greatly underestimates the actual number of deaths from any cause because only deaths occurring at a government facility are recorded. For example, 1,195,154 patient visits for diarrhea and dysentary were recorded for Punjab Province in 1982. Only 942 deaths were recorded, yielding a case/fatality ratio of 0.08%, a figure far lower than the 0.6 to 1% rate reported throughout Asis, Africa, and Latin America (6).

e. Lack of a mechanism to identify epidemics

The existing system which relies on yearly reporting has no mechanism for identifying disease outbreaks. The EPI Program has elected to bypass the regular reporting system and has instituted its own forms and demands monthly reports. Such a vertical system is the only method currently available to provide data which could identify epidemics in

time for response to occur.

f. Lack of feedback for data collectors

Little incentive exists to report data. The concepts of setting targets and assessing the efforts made to attain those targets are not widely appreciated. None of the health facilities which we visited has ever received a follow-up report on their efforts. None of the DHOs interviewed admitted to using surveillance data as the criteria for dispensing supplies, allocating manpower or assessing performance.

II.1 MASS MEDIA EDUCATION/DEMAND CREATION

If ORT is to realize its potential of saving up to 140,000 Pakistani children each year (70% of 200,000 children at risk can be helped by ORS), and reduce the impact of diarrheal episodes on infant malnutrition, then it must be widely available and correctly used both in the home and the health facility. Correct home use implies a range of new information and practices which mothers, older siblings, and other child caretakers must learn. These include:

- knowing what ORT is for
- knowing where to get it
- believing it works and be willing to use it
- mixing it properly in the correct volume of water
- giving the correct amount
- continuing breastfeeding and giving soft foods and other liquids during diarrhea
- using a set of simple cues to detect if the treatment is failing.

This suggests that unlike many other health interventions the mother must become a partner with the health professional in the diagnosis and treatment of her child. Her role is pivotal and comprehensive.

Presently it is clear that although some mothers in Pakistan are aware of ORT, only a few have used it. The Baseline Health Status Survey indicates 38.3% heard of it and some 10% had tried it. The present health infrastructure seems unable to reach sufficient women to produce a reasonable reduction in infant mortality due to diarrheal dehydration.

As outlined in the government's National Diarrheal Disease Control Programme, a dual approach to ORT is envisaged. Simple sugar and salt (S/S) solutions, mixed in the home should be advocated as an immediate response to the diarrheal episode, with complete formula packets widely available for prolonged bouts or at early signs of dehydration. At this time, the number of ORT packets actually available in Pakistan is impressively high; indeed Pakistan may be one of the few countries in the world to have widely available packets through both private and public sectors.

It is also clear that only a few mothers know about the sugar and salt formula. A number of important questions must be answered about S/S before an effective program can be put in place.

Finally, there is a need to start now to address the problem of infant diarrhea, and to have in place by May 1985 (the start of the diarrhea season) a serious national effort directed at widespread use of ORT in some form. Clearly health education will have to play a large role if this goal is to be met. Annex 3 describes the team's findings related to Pakistan's communication infrastructure and experience.

II.1.1. It is recommended that Pakistan adopt a two phased strategy. Phase I is to develop a comprehensive health communication program to promote the widespread proper use of existing ORT packets and implement a series of audience and market research programs to determine how a home-made sugar and salt solution could be added to the program in Phase II. Phase II would then use the information developed in Phase I to expand Pakistan's Oral Rehydration Program to include both packets and S/S. Special care should be taken in two areas.

First, the promotion strategy developed for the MOHSW product during Phase I should not conflict with those developed by commercial products. The strategies need not be the same, indeed perhaps they should be segmented to reach different audiences, but they must not be mutually detrimental. This will require cooperation between public and private sector marketing programs.

Secondly, Secondly, the promotion strategy developed for Phase I should recognize that S/S solutions will be introduced during Phase II. For example, positioning the S/S solution as a diarrhea "drink" while the packet might be positioned as a "power tonic for diarrhea". Obviously, this would need to be studied and the final solution based on careful audience and market research.

II.1.2 It is recommended that the health education program adopt an aggressive marketing strategy (see Annex 4) for the promotion of ORT during both Phase I and II. Extensive experience with ORS in Latin America and Africa has demonstrated that social marketing when combined with widespread ORT availability can produce dramatic reductions in infant mortality due to diarrheal dehydration. In Honduras, infant mortality attributed to dehydration dropped by 40% after only one year. An important finding was the ability of this approach not only to "inform people about ORT", but to go further and ensure that large numbers of women actually used ORT correctly. For example, half the women in the Honduras had actually used ORT at least once to treat their children.

II.1.3 It is recommended that to achieve these goals GOP should contract a local advertising and marketing firm to assist NIH in implementing the communication activities outlined in Annex 4. Additionally one person year of expatriate resident assistance is suggested to assist in social marketing for ORT, plus support for operational research studies, campaign materials and monitoring activities.

II.1.4 Guidelines for ORT use in Pakistan

While field research is essential to finalize many of these suggestions, the team recommends the following guidelines of ORT use in Pakistan:

II.2 It is recommended that the following guidelines be employed.

A. IN THE HOME

Mixing

- Volume - 1 liter standardized across public and private sector packets, as well as future sugar and salt recipes (See Table I.1.8.). Research to determine local litre measure.
- Use cleanest water available, do not require using boiled water.
- Make solution fresh each day.

Administration

- One glass of solution for every stool, given slowly with a spoon.

Monitoring

- After two days or 10 glasses, if a child has not improved, seek help at facility.

Feeding

- Give water and other liquid.
- Continue breastfeeding.
- Give soft foods (need to identify specific starch foods).

Forms of ORT Available

- Packets distributed by GOP through all health facilities or sold commercially and used at facilities and in the home.
- Sugar and Salt promoted as a home-mix tonic or "food for strength" during diarrhea.

Additional study on mothers' beliefs and practices for treating diarrhea needs to be carried out. Although some studies have been initiated,

more specific information relating to attitudes and practices in the home is necessary to support an effective public education campaign. (See Annex 5.)

B. IN THE HEALTH FACILITY

Mixing

- Volume - 9 liter bulk packs are being produced and could be made up daily to give out at health outposts.
- Use drinking water.
- Make solution fresh each day.

Administration

- Give volume required to replace dehydration deficit.
- Then match fluid intake with ongoing losses.
- Use thirst as best indicator for ongoing fluid requirements.
- Use IV only for patients in shock or >10% dehydrated.

Monitoring

- Follow degree of dehydration, purging rate, and volume of emesis.
- Monitor urine output and specific gravity.

Feeding

- Identical to guidelines in the home (Section A).

II.2. Public Sector Management

The licensing of medicines is a long established function of the Pakistan Federal Government. Currently there is no federal inspectorate. Inspection is carried out by provincial inspectors who concern themselves mainly with retail drug outlets. There are plans to establish a federal inspectorate in mid-1984. Assistance is being sought from WHO for training in the inspection of the pharmaceutical industry.

Drug testing is undertaken by the Drug Control Authority in the laboratory of NIH and in the MOHSW Central Laboratory in Karachi. Additional testing facilities include the provincial laboratory in Lahore, a new provincial laboratory in Quetta. There are also plans to establish a provincial laboratory in Peshawar towards the end of 1984.

It is recommended that:

- the government license only firms using the WHO composition
- packaging include illustrations on preparation and use of ORS
- the government require standardization of the quality of the active ingredients
- the government review all licenses for the manufacture of ORS with special reference to labeling and dosage instruction
- the government give priority to the establishment of a Federal Drug Inspectorate and seek WHO assistance in training in the inspection of pharmaceutical manufacture
- the government prepare a program of sampling ORS to ensure that samples of all brands from different parts of the country are examined at various periods after manufacture.

II.3. Training and Supervision

II.3.1. Much of the training and supervision infrastructure is already in place. The major concern would be that this training continue and that follow-up supervision and re-training be seen as an important part of the health care program. One round of training does not assure behavioral changes on the part of health care professionals. Unsupervised implementation is also risky.

The plan of operation for training outlined in the National Programme for the Control of Diarrheal Disease in Pakistan seems an appropriate approach to reach health care providers. Time spent in observing training materials and programs was much too brief to provide more than a superficial evaluation of the various training programs.

It is recommended that a systematic evaluation of training program be carried out, measuring exact skills of the trainees.

It is recommended that continued financial support be given to the Mayo Hospital Program in Lahore and that similar activities be created in Peshawar and Karachi. The medical officers program at the Medical Training Center for Diarrheal Disease Control provides a combination of lectures, practice and demonstration on ORT in a children's ward of the 37spital. This facility provides participants in the training program opportunity to receive practical, hands-on experience in the treatment of diarrhea patients. Continued financial support of this facility is highly recommended.

At the School of Public Health Nursing in Peshawar, MTs, LHVs, and TBAs receive academic and practical training in ORS at the school.

MTs, for example, spend one month during the diarrhea season working at the Children's Hospital (Infectious Diseases Hospital) where diarrheal patients are referred. They participate in the preparation and administration of ORS and often train mothers on a one-to-one basis. Some group instruction of mothers waiting with their children is carried out by doctors and MTs. Continued support of this pattern of training is highly recommended.

It is recommended that an ORS curriculum guide be developed and made mandatory in medical colleges. The several institutions now teaching ORS could meet to establish a standard guide, or, at least, minimal standards for teaching ORS.

It is recommended that a journal be published twice yearly on local research, advice, notes, etc., on Diarrhea Disease Control in Pakistan, thus providing a medium for professionals to discuss the program and creating a highly visible and prestigious forum for diarrhea.

It is recommended that in general, training should include the following:

- Greater emphasis on practical, hands-on experience. Less use of lecturer as a means of instructing.
- Greater use of competency based instruction and verifiable outcomes. Materials to support instruction should discourage instructors from doing all the talking and all the demonstrations or practice.
- Outcome should be measurable skills which can then be taught to others.
- Greater enthusiasm of instructors and sense of fun among trainees.

A typical diarrhea management training program is outlined in Annex 5.

It is recommended that traditional healers, the most widespread being the hakims, should be included in the ORS campaign. Hakims could be recruited, given several hours instruction in ORS mixing and administration as well as the symbol-flag, and identified on radio as a source of advice. Whether hakims are given packets to distribute needs further study.

It is estimated that 65% of the population has used the services of traditional practitioners at one time (3). Tying these practitioners into the network of village health care would increase the coverage of the ORS public education campaign.

An additional category of health worker may need alternative training strategies. Female MTs find it difficult to train and to carry out their training functions at the village level. The use of correspondence education might help on the training side. Perhaps an organization like

the Adult Basic Education Society in Gujranwala could help in the development of a course.

The outreach functions of the female MTs are more difficult to solve. Certainly adequate transportation is the first requirement. Greater mobility of either the MT or the village user is of primary importance.

It is recommended that a number of short-term training or orientation seminars be held for specific groups who could lend support to the ORS campaign. These might be evening seminars of two or three hours in length, stressing the benefits of ORS, its availability and the current campaign underway. The following, among others, would would be targeted:

- Radio and television personnel.
- Pharmacists.
- Journalists.
- Religious leaders.
- Educators.
- Community opinion.

II.3.2. Clear models for supervision were not observed. Supervision, follow-up and re-training are lacking. Only in Chawinda did we actually see an MT tutor from the training center in Sialkot acting as a supervisor.

It is recommended that more careful supervision of the paramedics be provided.

II.4. INDICATORS FOR MEASURING PROGRESS AND INPUT

The indicators to be monitored to assess the performance of the National ORT Program include: 1) the mortality and morbidity (hospitalizations) from diarrhea; 2) the use of ORT; 3) the production and sales of ORS; 4) the use of IV therapy for diarrhea; 5) the acceptance of ORS by the population; and, 6) the number of health care providers receiving ORS training.

II.4.1. Child mortality and morbidity from diarrhea

As stated in the Pakistani National CDD Program document, the primary objective of the national ORT program is to reduce child mortality from diarrhea. Since the present government surveillance system greatly under-reports deaths and episodes of diarrhea, the ORT program will need to obtain data on mortality from another source. The Baseline Health Status Survey (5) recently carried out can provide this data and the survey will be repeated in 1986 so that progress can be assessed on a number of issues related to the ORT Program including age-specific prevalence rates; deaths from diarrhea; awareness of ORT and knowledge of preparation; and utilization of government services.

Data on morbidity and mortality from diarrhea can also be obtained through a restructured and simplified government surveillance system. A revised OPR and AR are currently being field tested in Punjab and Sind provinces and if successful, may be used nationally.

While data on hospitalized patients including use of an oral rehydration center, admission rates for diarrhea by age, degree of dehydration, use of ORS, use of IV therapy for diarrhea, and outcome should be obtained from all hospitals, initially a few sentinel hospitals should be selected to provide this data. Forms to collect this data have not yet been produced. Monthly reporting will provide useful information on treatment of the most severe cases of diarrhea. One such center should be selected in each province on the basis of size of the pediatric population treated, current knowledge and use of ORS, and commitment to collecting data. From our impressions, these centers for NWFP, Sind and Punjab Provinces should be the Infectious Disease Hospital, Peshawar; the Civil Hospital, Karachi and King Edward Medical College, Lahore.

It is recommended that:

- data from the Baseline Health Status Survey be utilized to assess mortality and morbidity from diarrhea.

- the current government surveillance system be restructured and modified.

  i. establish consistent criteria for the diagnosis of diarrhea (including vomiting and diarrhea, gastroenteritis, cholera, and fever with diarrhea as diarrhea);

  ii. assess success of new registers being field tested now in Punjab and Sind through the Primary Health Care Project;

  iii. enforce monthly reporting;

  iv. utilize the age divisions <1 year, 1-4 years, 5-14 years, 15+ years;

  v. provide feedback to data recorders.

- one sentinel hospital in each province be selected to provide data on use of an oral rehydration center, admission rates for diarrhea by age, degree of dehydration, use of ORS, use of IV therapy for diarrhea, and outcome. From the 3 provinces visited by the team, we would recommend the Infectious Disease Hosptial, Peshawar; the Civil Hospital, Karachi; and the Mayo Hospital, Lahore.

II.4.2. Use of ORT

- The data on use of ORS and home-made solutions will come from the national diarrhea disease survey, from surveys carried out by the mass media campaign to assess awareness and use, and from records of distribution of ORS through the government health system.

It is recommended that the ORT Program:

- Carry out and utilize the data from the surveys described previously.
- Enforce the monthly reporting of ORS supply and distribution through the government system.
- Utilize usage data to organize distribution plan.

II.4.3. Production and sales of ORS

It is recommended that

- private companies be required to report production and sales figures of ORS in their license to manufacture.
- Quarterly reporting be required by the manufacturers.

II.4.4. The use of IV therapy for diarrhea

It is recommended that the data collected at the sentinel hospitals initially (and later from all government hospitals) include the use of IV therapy by the age and degree of dehydration of the patient.

II.4.5. Acceptance of ORT by the population

It is recommended that:

Surveys be developed and carried out by the education/media component of the program and the data reviewed along with the results of the Baseline Health Status Survey. The factors to be evaluated should include:

- No. of people able to identify ORT radio spots broadcasts on previous day.
- No. of people able to describe the program logo/symbol.
- No. of women able to identify the flag volunteer in their area.
- No. of traditional healers incorporated in program.
- No. of posters visible in health centers.

- No. of women able to correctly mix ORS solution.
- No. of women claiming to have used ORS solution for last episode of diarrhea.
- No. of physicians who used ORT in past six months.
- No. of women with flyer in home.

II.4.6. The number of health care providers receiving ORS training

Recommendation:

Initiate reports from each training center to provide data on the number, position, and location of workers trained.

II.5 EVALUATION AND RESEARCH

II.5.1. Evaluation

All government officials whom we interviewed emphasized the need to strengthen the evaluation component of the health system. To accomplish this, a full-time manager who has extensive experience in supervision and evaluation should be selected for the program. If this person is an expatriate supplied by a donor agency (such as the EPI manager supplied by WHO), a full-time in-country counterpart should also be selected. In addition, a full-time ORT Program Coordinator should be selected for each province to ensure that the media education, ORS distribution, treatment, and assessment components of the program are carried out.

The data for the ongoing evaluation will come from the surveys and simplified reporting system described earlier. Spot checks will be made by ORT supervisors at village homes to assess the prevalence of diarrhea and the knowledge and use of ORT.

The evaluation and media campaign will be through the surveys previously described.

The educational program will be evaluated through visits by the medical educators and district ORT supervisors to each group trained including doctors, medical technicians, lady health visitors, and community health workers. These supervisors will assess the methods practiced by these groups to promote and use ORS and retrain where needed.

The evaluation of the quality of ORS production will be assessed by the Drug Control Unit of the MOHSW by a mechanism already in place and being further developed.

It is recommended that the ORT Program:

- Immediately select a full-time manager for the national ORT program who has extensive experience in supervision and evaluation.

- Select an in-country counter part if this person is an expatriate provided by a donor agency.
- Select a full-time provincial ORT coordinator for each province.
- Select a full-time ORS supervisor for each district.
- Evaluate data from the media surveys and national diarrhea survey described above and from data from the proposed simplified government reporting system.
- Establish specific criteria for performance of health staff.
- Initiate spot checks of staff performance and home use of ORT will be made by district ORT supervisors.
- Emphasize feedback on performance and attainment of objectives will be provided at all levels of the program.

II.5.2. Research

It is recommended that research projects be considered in four areas: operational research in mass media techniques and surveillance and reporting techniques, a comparative study of efficacy of antidiarrheal agents and placebo to treat diarrhea, and a study of the infectious agents which cause diarrhea in urban and rural Pakistan.

II.5.2.1. Operational research in health communication

Several aspects of the proposed educational campaign require small studies to help shape the message and channel strategy for PHASE I, as well as developing package instructions, logo, and sugar and salt formulation. The proposed studies include:

- Diarrheal Practices: Combination of document review and focused group studies done by local anthropologists to determine:

  What treatments are common now?

  What beliefs associate with diarrhea?

  What expectations for diarrheal remedies?

  What is most credible source of information on diarrhea?

- Packaging and Logo Study: Field trials of visual instructions and logo for package. Comparison of several models to determine clarity, appeal and viability. Done by local advertising firm.

- Media Reach and Use: Analysis of existing media reach information at PBC plus small provincial studies of impact of present ORS spots (TV and Radio) to be done by Pakistan Broadcasting Corporation (PBC) research unit.

- Sugar and Salt Study: Field trials to determine common obstacles to mixing S/S in village. Sampling to determine availability of common vessel and measuring instruments to be done by local advertising firm.

II.5.2.2. Operational research in surveillance and reporting techniques.

The work begun on simplifying and restructuring the current reporting system through the Primary Health Care Project should be continued. Specific areas to be addressed include: stardardizing the forms used at all health facilities, recording entries by the age groups < 1 year, 1-4, 5-14, and 15+, signficantly reducing the diseases reported in the Abstract Register, establishing the criteria for the diagnosis of diarrhea, and introducing meaningful monthly reporting of data. (See Section II.4.1)

II.5.2.3 Carry out a comparative study of the efficacy of antidiarrheal agents vs. placebo for treatment of diarrhea.

Such a study might be funded by a donor agency and could be carried out on hospitalized patients to ensure better follow up. A teaching hospital with a staff having a background in carrying out clinical trials would be optimal. Patients admitted for uncomplicated diarrhea and dehydration could be assigned to receive either a locally-popular antidiarrheal agent or placebo. The enrollment of 50 patients should provide a sufficient sample size. Funds would be secured from a donor agency.

II.5.2.4. Determine the infectious agents associated with diarrhea in an urban and a rural setting.

Patients with diarrhea (and appropriate controls) presenting to an urban hospital and a rural health center would be cultured for the common enteric pathogens. The study in each setting should last for one year and would provide valuable information on the nature and seasonality of infections. This information could then be used to reinforce the message about the lack of usefulness of antidiarrheal agents and antibiotics and emphasize the seasonal variation in need for supplies.

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TABLE 1.1.8

Volume of ORS required for a 6-month old child with mild diarrhea:

mean weight : 6 kg

fluids required :

maintenance	- 600 cc
2% dehydration	- 120 cc
ongoing losses	- 250 cc
	970 cc

*Reference 4 : Basic Health Status Survey - 1984

TABLE - 1.4

ORT SUPPLIES AT DRUGGISTS
VISITED IN 3 PROVINCES

City/ (Population)	Druggist	ORT Brand	Size	Stock	Rs/Packet	Sales/Wk
NWFP						
Peshawar (700,000)	1	Fakma	1/ltr	100	Rs 3	20 packets
	2	Pharmedic	1/ltr	140	Rs 3	20
		Fakma	1/ltr	40	Rs 3	10
	3	Fakma	1/ltr	27	Rs 3	14
	4	Fakma	1/ltr	120	Rs 3)	
		Pharmedic	1/ltr	20	Rs 3)	35
	5	None				
Khairabad (8,000)	1	Fakma	1/ltr	20	Rs 3	15
		Sanavita (Ger.)	1/2 ltr	10	Rs 2	2
	2	Pharmedic	1/ltr	30	Rs 3	15
	3	Pharmedic	1/ltr	13	Rs 3	5
	4	Fakma	1/ltr)		Rs 3)	
		Sanavita	1/2 ltr)	50	Rs 2)	15
Jehangira (5,000)	1	Fakma	1/ltr	20	Rs 3	10
SIND						
Karachi (7,000,000)	1	Fakma	1/ltr	20	Rs 2	12
	2	Fakma	1/ltr	30	Rs 3	15
	3	Fakma	1/ltr	120	Rs 3	60
	4	Fakma	1/ltr	80	Rs 3	60
	5	Fakma	1/ltr	90	Rs 3	50
	6	None				
Thatta (10,000)	1	Fakma	1/ltr	16	Rs 3	10
Sahiwal (10,000)	1	Fakma	1/ltr	35	Rs 2	15
	2	None				
	3	None				
	4	None				

TABLE - 1.4 (contd)

Darro (5,600)	1	Fakma	1/ltr	20	Rs 3	10
	2	Fakma	1/ltr	20	Rs 3	10
	3	None				
Gharo (10,000)	1	Fakma	1/ltr	30	Rs 3	15
	2	None				
Dhabeji (7,500)	1	None				
PUNJAB						
Chawinda (13,000)	1	Star	1/ltr	60	Rs 3	70
	2	Pharmedic	1/ltr	30	Rs 3	10
	3	Pharmedic	1/ltr	20	Rs 3	7
	4	Pharmedic	1/ltr	14	Rs 2	3
	5	None				

Table 5.1

ures and potential procedures/supplies of O.R.S.

mpany	Product Name	Registration Number	Registration Date	Formula	Pack Size	Current Annual Production 1983-84	Estimated Production 1984-85	Installed Capacity (Single shift)
Ciba-Geigy	Servipharm ORS	Application to import under consideration		Standard	13.75g/ 500 ml	Nil	Imports	Not Applicable
s Pharma	Rehydrate Powder	00511	1980	Standard	27.5g/1 litre	2.5 million	*5 million	4.5 millio
man	Geofman S.P. salts	006199	1981	Standard	27.5g/1 litre	Nil	?	7.5 millio
ore Chemical harmaceutical ks (LCPW)	Howard's ORS	006688	1984	Standard	13.75g/ 500 ml 27.5g/1 litre	Nil	*15 million	7.5 millio (22.5 million**
medic oratories		006404	1982	Note 1	28.5g/1 litre	?	* ?	?
jab Drug se (PDH)		007117	1984	Standard	27.5g/1 litre	Nil	Up to 2 million	2.5 millio
le	Peditral	007277	1984	Note 2	10g/250ml 40g/1 litre	Nil	?	?
	Rehydrate Powder	006160	1981	Standard	27.5g/1 litre	?	* ?	?
boratories	Hydrasol	005412	1980	Standard	13.75/500ml) 27.5g/1 litre	7 million	*8 million	12 million
ilson's Pharmaceuticals	Orasal Powder	Application received		Note 3	14.5g/250ml	Nil	?	?

* - Actually producing by May 1984.
** - Will increase to 22.5 million about July 1984.

Ex 1

Persons Met and Places Visited

Islamabad:

April 30, 1984

Cornelia E. Davis, M.D.
Chief/Health, Population and Nutrition, USAID

Commodore Mohsin Pal
Secretary of Health, Government of Pakistan

General Dr. I.M. Burney
Director, National Institute of Health,
National ORS Coordinator, Islamabad

Col. Dr. Mohammad Akram,
EPI Coordinator, Ministry of Health, Social Welfare

Mr. Abdul Sattar Chaudhry
Chief, Public Health Education, Basic Health Services

Mr. Nazakat Ali
Asst. Manager/Logistics, EPI

Mr. Siddiqui
Health Education, EPI

Dr. Witjaksono Hardjotanojo
EPI Coordinator, WHO

Mr. David Mason
Communication Expert, UNICEF

May 01, 1954

Ms Jinny Sewell
Project Officer, USAID

May 02, 1984

Dr. Abdul Khalique
Secretary of Health, N.W.F.P.

Dr. Ranzep
Director of Health Services, N.W.F.P.

Dr. Kamil
School of Public Health Nursing
ORS Coordinator, N.W.F.P.

Dr. Rohidar Shah
Infections Disease Hospital, Peshawar

Dr. Ashfaq Khan
Professor of Pediatrics, Khyber Teaching Hospital

Mr. Riaz Bangesh
Health Educator, N.W.F.P.

Dr. Mumtaz Ahmad
Secretary, Peshawar Branch, Pakistan Medical Association

May 03, 1984

Dr. Zafar Shah Afridi
District Health Officer

Dr. Ameer-ul-Mulk
Medical Officer, Khairabad Rural Health Center

Dr. Rashid Pervez
Medical Officer, Shuidu Basic Health Unit

Dr. Yunis
President, Peshawar Branch, PMA

ORS Presentation: Peshawar Branch, PMA

Karachi:

May 05, 1984

Dr. Arshad Malik
Secretary of Health, Sind Province

Dr. Nisar Ahmad Siddiqui
Deputy Secretary of Health, Sind Province

Dr. Gaffar Billoo
Professor of Pediatrics, Dow Medical College

Dr. Mushtaq Khan
Professor of Pediatrics, Jinnah Postgraduate Institute

Mr. Bengt Stenburg
Head of Pharmaceutical Division, Ciba-Geigy, Karachi

Mr. S.M. Saboor
Chairman, Geofman Pharmaceuticals, Karachi

Karachi:

May 06, 1984

Dr. Hafiz Mohammad Ilyas
Director, Hamdard Foundation (Waqf), Karachi

Mr. Anwar Ali Sheikh
Statistical Officer, Sind Province

Mr. Abdul Sattar Khan
Health Education Officer, Sind Province

Mr. John Peacock
Program Officer, UNICEF

Dr. Majeed Khan
Director, Liaquatabad District Hospital

Dr. L.M. Inkisar Ali
Department of Pediatrics, Dow Medical College
Civil Hospital, Karachi

Mr. Dara Bashir Khan
Director, Manhattan International Ltd (ad agency)

Mr. Bashir A. Khan
Chairman and Managing Director, Manhattan International Limited

Mr. Syed Naseer Haider
General Manager, International Advertising Limited

Mrs. Shahnaz Imam,
A.I.D., Primary Health Care

Mr. Ijaz Sheikh
A.I.D., Primary Health Care, Management

Dr. Hafiz Mohammad Ilyas
Director, Hamdard Foundation (waqf), Karachi

ORS Presentation: Karachi Branch, PMA

May 07, 1984

Dr. Ghulam
Medical Officer, Dairo Rural Health Center

Dr. Mohammad Bux
District Health Officer, Thatta District

Dr. Jamandas
District Health Officer, Thatta District

Mr. Mohammad Amin Khan
Managing Director, ZAFA Pharmaceutical Laboratories Ltd. Karachi

Lahore

May 08, 1984

Dr. Shaukat Raza Khan
Professor of Pediatrics, King Edward Medical College, Lahore

Dr. Asifa Murtaza
Pediatric Gastroenterology, King Edward M.C., Lahore

Dr. Hafiz Mahmood
Chief, Accelerated Health Program, Directorate of Health, Punjab Province, Lahore

Dr. Mahboob Shah Pirzada
Provincial Project Director ORS
Directorate of Health, Punjab Province, Lahore

May 09, 1984

Lecture to Department of Pediatrics, King Edward Medical College, Lahore

Dr. Fahmida Jalil
Professor of Pediatrics, King Edward Medical College, Lahore

Dr. Ilahi Bux Soomro
Director of Heath Services, Province of Punjab, Lahore

Mr. Edward Trainer
Program Officer, UNICEF

Mr. Choudhary Nadir
Proprietor, Fakma Pharmaceuticals

Mr. Mumtaz A. Sheikh
Managing Director, Lahore Chemical and Pharmaceutical Works Ltd, Lahore

May 10, 1984

Mr. Shamshad Qureshi
Management Analyst, Primary Health Care, USAID

Dr. Mohammad Ali Sheikh
Deputy Director of Health,
Gujranwala Division, Punjab Province, Lahore

Dr. Qari Abbas
Medical Officer, Chawinda Rural Health Center, Punjab

Mr. Mohammad Ishaq and Miss Shahnaz Akhtar
Medical Technicians, Kotila Sayyadian BHU

Mr. N.A. Rizvi
Medical Technician, Inter Medical Technician Training School, Sialkot

Mr. M. Iqbal Hussain Malik
Managing Director, Star Laboratories Ltd, Lahore

Mr. Mian Khalid Mansur
Managing Director, Reko Pharmaceutical Ltd, Lahore

Mr. Sheikh Mohammad Ilyas
Director, Punjab Drug House Laboratories Ltd, Lahore

Lahore

May 11, 1984

Mr. Laeeq Ahmad Khan
Division of Primary and Non-Formal education,
Ministry of Education

Dr. Abdul Q. Khokar
Managing Director, Remington Pharmaceuticals
Industries, Lahore

Islamabad

May 12, 1984

Dr. Witjaksono Hardjotanojo
EPI Coordinator, WHO

May 14, 1984

Dr. Zaheer Ahmad Jan
Deputy Director General/Drug Controller
Ministry of Health

Mr. Nisar Hussain
Director of Education
Pakistan Television Corporation Ltd

Mr. Zeal Mussell
First Secretary (Development)
Canadian Embassy

May 14, 1984

Mr. M.A. Kazmi
Pakistan Radio Corporation

Mr. Nihal
Controller Audience Research
Pakistan Radio Corporation

May 15, 1984

Dr. Doris Brdolenberg-Nayyar
Ethnologist
Quaid-i-Azam University
Islamabad

ANNEX 2

COST OF ORS PRODUCTION AT NIH, ISLAMABAD

1. Production Capacity

Current production is based on a 41.25 kg bulk mix of the ingradients which is equivalent to 3000 x 13.75g sachets, i.e. sachets to produce 1/2 liter of oral rehydration liquid.

On single shift working, four batches can be filled into sachets by one machine daily. A filling rate of 60 sachets/minute is well within the capability of the machine. Thus a 3000 sachet batch can be filled in 50 minutes of machine time.

There are two filling machines giving a combined attainable production rate of 24,000 sachets/day on single shift or 48,000/day on double shift working.

If 240 working days per year are assumed, then annual production would be 48,000 x 240 = 11,520,000 sachets.

However, it is assumed for the purpose of costing that annual production will be 10,000,000 x 1/2 liter sachets.

2. Input Material Costs

Costs are estimated on the basis of prices actually paid for material now in stock (which is sufficient for 10 million sachets) thus:

For each sachet:

Component	Quantity	Price	Unit Cost
Sodium Chloride	1.75g	Rs 3.70/kg	Rs 0.00648
Potassium Chloride	0.75g	Rs 31.00/kg	Rs 0.02325
Sodium Bicarbonate	1.25g	Rs 6.90/kg	Rs 0.00863
Glucose, Anhydrous	10.00g	Rs 15.50/kg	Rs 0.15500
		Sub-total	Rs 0.19336
Aluminium Foil	$0.014/m^2$	Rs $20/m^2$	Rs 0.26272
		Total	Rs 0.47608
		Say	Rs 0.476

3. Salaries and Wages of ORS manufacturing personnel for 2 shift working

Grade	Monthly Emoluments/Rupees			No.	Total
	Salary	Allowance	Total		
Scientific Officer	2,080	1,085	3,165	1	3,165
Technical Assistant	660	370	1,030	2	2,060
UDC (Clerk)	560	320	880	1	880
Machine Operator	520	305	825	6	4,950
Packer	480	285	765	4	3,060
N/Qasid (Peon)	440	270	710	1	710
Sweeper	440	270	710	1	710
Store Keeper	700	385	1,085	1	1,085
					16,620

Annual Salaries Rs 199,440

4. Cost of Production of 10 million x 1/2 liter sachets

Salaries and Allowances	Rs	199,440
Pension (12.5% of salaries + allowances)		24,930
Depreciation of Plant (5% p.a.)		50,000
Depreciation of furnishings (5% p.a.)		350
Rent		50,000
Water		20,000
Consumables		22,500
Stationery		750
Interest on working capital (7% of Rs 4,763,600)		333,452
Sub-total	Rs	701,422
Input materials for 10 million sachets		4,760,800
Total	Rs	5,462,222
Therefore Ex-factory cost of 1 x 1/2 liter sache: =	Rs	0.54622
Say	Rs	0.546

5. Estimated Cost of a 1 liter pack

This estimate is made relative to the 1/2 liter pack:

Cost Component	Cost for 1/2 liter	Factor	Cost for 1 liter
Ingredients	Rs 0.19336	2.00(1)	Rs 0.38672
Foil Pack	Rs 0.28272	1.35(2)	Rs 0.38167
Processing	Rs 0.07014	1.20(3)	Rs 0.08417
	Rs 0.54622		Rs 0.85256
Say	Rs 0.546	Say	Rs 0.853

Factor:

(1). The 1 liter pack contains exactly twice the ingredients of the 1/2 liter pack.

(2). The liter sachet has 1.35 x the area of foil of the 1/2 liter sachet.

(3). An arbitrary factor of 1.20 has been assigned to allow for slightly slower filling rate, twice as many bulk batches to be mixed, increase in working capital.

6. Comparison of costs of the two pack size

(a) The 1 liter pack costs 56% more than the 1/2 liter pack.

(b) The 1 liter pack costs Rs 0.306 more than the 1/2 liter pack

(c) Cost of the foil sachet is: 52% of 1/2 liter pack cost

45% of 1 liter pack cost

Annex 3

CURRENT SITUATION

MASS COMMUNICATION AND PUBLIC EDUCATION

Radio

Stations	16
Local Programing	80%
Network Programing	20%
Broadcast hours	5.45 - 9 a.m.
	11 a.m. - 11 p.m.
Prime Time	7.30 - 9 a.m.
	7.00 - 9 p.m.
Entertainment	60%
Information and Education	40%
Special Audience (women, children, laborers, students)	Weekly 1 hour
Revenue from advertising and licenses on sets	
Number of sets estimated 1982	9,800,000
Signal Coverage:	
Shortwave	100%
Mediumwave	95%
Broadcast languages	17
Advertising languages (Urdu, Punjabi, Pushtu, Baluchi)	4

Local language advertising	10%
Advertising rates - minimum rates:	
Islamabad, 60 sec. spot	$168
Karachi, Lahore	112
Rawalpiondi	69
Multan, Hyderabad, Faisalabad	49
Peshawar	36
Bahawalpur, D.I.Khan, Khairpur	31
Quetta	24
Gilgit, Skardu, Khuzdar, Turbat	16
Length of advertising spots/sec.	7, 15, 30, 60

There is a 30% discount for government programing, even on fixed point spots. Extra charges for prime time and fixed point would be added, then 30% off.

Major advertisers are fertilizers, banks and insurance companies, the Open University, Water and Power, National Savings, cigarettes and tobacco, soft drinks, health education and social welfare.

The most popular programs are the farm program specifically about agriculture. The rural program is also very popular. There are several very popular radio characters of long standing. One example is Talqeen Shah (character's name), a very popular humorous and satirical character who deals with social issues. The program is created by Ashfaq Ahmad. His wife also writes and acts in the series. Popular characters such as these might be used in media campaign. Music programs are also popular and health messages might appear in this form. This is considerable

variation from province to province so songs would have to be localized. Theme song identification with products is common practice. PBC recommended the following stations for the ORS campaign: Peshawar, Rawalpindi, Lahore, Multan, Faisalabad, Quetta, Hyderabad, Karachi, D.I. Khan, and Muzaffarabad.

The PBC has considerable strength in its Audience Research department. They carry out regular audience surveys for PBC and for individual clients. With a staff of 16, including 6 field members, they also carry out specific audience research.

Television

Channels	1
Production facilities (Karachi, Islamabad, Lahore, Quetta, Peshawar)	5
Remote units, mostly for news	25
Broadcast hours	5-11 p.m.
Prime time	
Summer	7.30 - 10 p.m.
Winter	6.30 - 9 p.m.
Health programing, per week	60 mins.
Revenue from advertising and licenses on TV sets	
No. of sets estimated	500,000 - 1,500,000
Signal coverage	70-80%

Advertising rates, 60 sec. spot - (minimum rates)

Karachi	$486
Lahore	283
Islamabad	219
Peshawar	86
Quetta	52
Network	996
Length of advertising spots/sec.	7, 15, 30,60

There is a 30% discount for government programing but scheduling is at the station discretion. Prime time advertising is more expensive, for example mid-break in the news is 2-1/2 times more, mid-break during live or VTR program is 1-1/2 times more.

Large advertisers are cigarettes, textiles, soft drinks, and biscuits.

Most popular programs are Urdu dramas.

There is no audience research division.

Current Use of radio and television in the ORS campaign

Television

For the past 4 months, 30 second spots on ORS and EPI have been played on alternate days. These spots were produced by Manhattan Advertising Agency in Karachi. No measure of their effectiveness has been undertaken. There has been some resistence to the spots from influential community members because they show diseased children.

Radio

The Ministry of Health purchases radio time. Currently two 30 second spots on ORS are played daily. Scripts are sent to the stations who read the spots in local languages. In addition there is a 7 minute program which the provincial health educator organizes. Usually it is a general health discussion or talk, often by a doctor.

Other health topics appear on news and discussion programs which are scheduled by the radio stations themselves.

Print materials

Available from the Health Education Cell, MOH:

1. Book, "When There is No Doctor". For trainers and Health Educators.
2. Training Mannuals. Chapter on diarrhea in English, 1 in Urdu. For Community Health Workers.
3. Training Kit. Mainly on nutrition, section on diarrhea. For LHVs and mid-level managers.
4. Curriculum Materials. Section on diarrhea. For mid-level managers.
5. Flip Charts. On diarrhea and ORS. Community Health Workers and LHVs.
6. Posters on ORS. For doctors.
7. Flip Charts. Health in general, 4 pages on diarrhea.
8. Book, by Mushtaq Khan and Joni Baker. On health and nutrition, with a chapter on diarrhea. For CHWs.

9. Booklet from UNICEF. Section on diarrhea. For CHWs.

10. Kit, including booklets. On nutrition, with sections on diarrhea. For LHVs.

11. Posters. On diarrhea. For public and CHWs.

12. Flip chart. On integrated health program, with 2 pages on home-remedy.

Some of these materials have been produced and distributed throughout the country. Flip charts and posters, are designed but not yet produced.

In addition to materials produced at the federal level, provincial Health Educators are also producing print and A-V materials. For example Sind is producing 20,000 copies of posters for distribution this year, 100,000 for next year. They are distributing a pamphlet on diarrhea, 5,000 in Urdu, 5,000 in Sindhi. In Punjab, there are handbills or booklet for LHVs, a booklet on ORS. Dr. Shaukat Kaza Khan's article on acute diarrhea is being printed in 50,000 copies each.

Observation in the RHCs and BHUs indicates that in most units only the manuals for MTs and CHWs are on site. Many MTs have produced their own posters, with varying degrees of success, but with the intention of providing more training tools.

A-V Materials

1. Slide set. On several health topics including diarrhea. For Health Educators.

2. Slide set. General health topics. For training centers mid-level managers, doctors, Health Educators.

At the provincial level, we observed the availability of an audio cassette for use in the mobile vans. Two of the provincial Health Educators are also preparing slides to be shown at cinemas.

Health Educators also indicated that filmed health messages are shown at the cinemas. The exact nature of these messages is not known, but it is assumed that they are the same as the TV spots.

General Newspapers and Journals

English	108
Urdu	419
Sindhi	67
Gujrati	3
Pushtu	13
Punjabi	2
Baluchi	3
	615*

*Market research by Raschid Ahmed Jaffrey, Richardson-Vick Co. Karachi.

It is estimated that daily newspaper runs average little more th 100,000**.

** Lt.Gen. Mujibur Rehman Khan, "Health Communication".

Interpersonal Contact

There are more than a dozen categories of health workers within the governbment health services system. This includes doctors, nurses, dentists, dental technicians, hospital paramedics, lady health visitors,

sanitary inspectors, midwives, dispensers, medical technicians, traditional birth attendants, and community health workers.

In addition, health educator posts have now been created down to the district level.

The potential for face-to-face communication about ORS is enormous. Through the established training programs for medical officers and paramedics, a mechanism exists for the immediate implementation of training materials on ORS in such programs. Efforts to accomplish this are now being made.

It seems two areas of greater emphasis are needed in the interpersonal contacts: 1) more consistent and standardized strategy for the use of ORS packets, a home-made sugar and salt solution, and diminished use of antidiarrheals and antibiotics, and 2) considerably more outreach activities on the part of paramedics in reaching the village level.

The major breakthrough needed for greater use of ORS is direct appeal to mothers and other members of the family (e.g. mothers-in-law) who make decisions about family health care.

1. Doctors - the doctors' influence about ORS is largely limited to contact during treatment for diarrhea. Some hospitals, for example the Civil Hospital and the Institute for Child Health in Karachi and Mayo Hospital in Lahore, have strong programs for ORS as a treatment.

2. Health Educators - health educators work both as trainers within various programs for medical officers and paramedics as well as direct

education of the public. The latter aspect of public education is not very well developed at the present time.

3. Medical Technicians - MTs could play a much larger role in public education if their outreach activities were more effective. Limited ability to travel to the villages and work directly with CHWs or mothers handicaps this program. ORS is only one of their health strategies.

4. Community Health Workers - the CHWs are also generalists. At the village level, diarrhea is likely to be the commonest health problem. More extensive training and follow up could greatly benefit this category of worker.

5. Other paramedics - all health workers should have information about ORS and be able to deliver the same messages to patients. Although many have rather specific responsibilities, their knowledge would extend the face-to-face contact with ORS users.

ANNEX 4

SOCIAL MARKETING

Social marketing, that is the use of commercial marketing techniques to promote health or other social goals, has several special characteristics. It:

- incorporates the patients' views and appeals to their expressed needs, beliefs and vocabulary;
- limit itself to promoting only a few actionable messages;
- integrates several different communication channels, ensuring that they interact to reinforce the impact of each;
- stresses long-term programming, avoiding the "quick-fix" mentality of mass campaigns;
- uses regular monitoring of the target population to detect significant problems and make changes as needed; and,
- often promotes the sale of socially valuable products or services at subsidized pricing structures.

In this case we do not recommend adding price as a factor, but suggest that the other elements of social marketing approval be applied to government provision of ORS. Private sector commercialization of ORS should follow their existing pricing system.

2.1.3 It is recommended that Pakistan develop an educational campaign fo the 1985 diarrheal season whose:

PRIMARY AUDIENCE is mothers of children under 5, older sibblings and grandmothers of these families.

SECONDARY AUDIENCE is health care providers and pharmacists to stimulate their support for ORT as an indispensable part of a multi-faceted diarrheal treatment program.

Both urban and rural audiences should be reached through serveral.....

CHANNELS integrating mass media (primarily but not exclusively radio) with simple print materials and village peer support to teach.....

MESSAGES such as - "where to acquire packets", "how to mix them in a correct and standard measure of water", "how much solution to give", "what other foods to give", and "what signs to look for if the child is not improving".

Specifically we recommend that Pakistan develop:

- an attractive and easily identifiable name for oral rehydration as distinct from their specific product
- a campaign logo relevant to the audience and generalized to a variety of ORT products, both public and commercial
- an instructional flyer, which could also be part of a packet label, which demonstrates how to mix the solution
- an instructional poster for health centers reminding health workers of key mixing and administration information
- a colorful flag with ORS emblem to be placed on all health posts and given to all village volunteers trained to mix and administer ORT. Special radio program then inform people that flag is sign of help for mixing ORS.

- point of purchase generic advertising for ORS in health centers and medical stores
- a series of radio spots which instruct the public about:
  - the importance of ORT
  - acquisition, mixing, and administration of ORS in the home
  - feeding during diarrhea, and
  - monitoring indicators for the mother to judge the child's improvement
- a series of television spots directed at physicians, pharmacists and other opinion leaders on the importance of ORT, and training courses and seminars for medical professionals which permit them to actually rehydrate children.

Additionally, it is suggested that linkages be established to the EPI program where possible. A message strategy that focuses on childcare, or mothercraft would permit the incorporation of several themes over the full year period:

- pulsing of the diarrhea campaign should reflect the seasonal pattern of diarrhea, intensive effort during the peak months;
- a campaign against anti-diarrheals should be avoided in favour of "everything works better with ORT". While legal restrictions against antidiarrheals may be useful, they should not be included as an educational theme;

- exploration of non-conventional media - rural theatre, puppets, community organization, and the involvement of traditional healers be included;
- cooperation with other donors, particularly UNICEF and CIDA be maximized.

ANNEX 5

CHILD HEALTH CARE BY MOTHERS IN VILLAGES

Diseases fall into categories of hot-cold, wet-dry as foods do. Diarrhea is a wet disease. Common treatment is opposite, that is combat with dry remedies such as crushed herbs.

Diseases have a spiritual or supernatural cause. Role of traditional healers is important, especially the hakims. Traditions vary between provinces. The Punjab and Sind draw heavily on Hindu medical traditions.

The perception of diseases is dictated by language.

Influences on the mother come from her family - mother, brothers, etc. The mother-in-law plays a strong role, often confrontational. Older female siblings could play a role in educational campaigns.

The idea baby is a fat baby.

Sherbet, especially those administered by a hakim, is an important tonic.

The above comment are from an interview with Dr. Doris Buddenberg-Nayyar, Ethnologist, Quaid-i-Azam University, Islamabad. Dr. Nayyar commented that little medical anthropology has been undertaken in Pakistan. The department at Quaid-i-Azam University has carried out some studies and has female lstudents who could continue studies of rural women.

Studies on child-rearing practices mention these additional points (10, 11, 12).

There is a belief that Western drugs are too strong.

Child care is the mother's responsibility.

Breastfeeding is continued until from 6 months to 2 years. Supplemental feeding begins from 9 months to 2 years.

The evil eye is one cause of illness. It is warded off by taweez.

Food and milk intake is generally reduced during diarrhea. There is a belief that liquid is passing through and doing no good. Mother's dilute e child gets diarrhea.

ANNEX 6

ORS TRAINING PROGRAM

A typical diarrhea management training program might have the following objectives, modified slightly for the different medical or paramedical group:

- All trainees will assess child's hydration status correctly.
- All trainees will implement a diarrhea treatment plan correctly.
- All trainees will mix an ORS packet and water correctly.
- All trainees will mix a S/S solution correctly.
- All trainees will teach ORS and S/S preparation and administration effectively.
- All trainees will teach diet for diarrhea effectively.
- All trainees upon completion of the training will train additional health workers.

It is recommended that training activities for ORS should be structured according to the following learning method:

- A rationale for the target behavior is provided.
- The behavior is modeled expertly by a trainer.
- Participants practice the behavior.
- Participants learn to discriminate between correct and incorrect performance, especially in key areas where critical mistakes are likely.

- Intensive individual practice is aimed at greater fluency and skill in performing the behavior, and gradually performing the behavior under actual field conditions.,
- Group discussion is held on relevant participant experience and potential constraints to performing the behavior in real-life conditions.
- Performance is reviewed together with self-corrected testing of knowledge and skills to be acquired.
- Immediate post-training applications and rewards are provided.

ANNEX 7

SUMMARY LIST OF RECOMMENDATIONS

The following list summarizes each of bey recommendations made in the main body of the report. They have been greatly condensed to permit rapid review:

1. Name a full time manager for the ORT program.
2. Nominate an in-country counterpart, if director is expatriate.
3. Develop a two phase strategy, Phase I to focus on promoting existing packets supply, Phase II to focus on popularizing a sugar and salt home mix.
4. Adopt an aggressive marketing strategy to promote existing supplies of ORS.
5. Contract with local advertising firm to ensure top quality, professional marketing campaign aimed at rural consumers.
6. Standard ORS usage guidelines for both home and clinic.
7. Incorporate WHO formulae as part of government licensing procedure.
8. Include instruction on all packets, private and public.
9. Standardize volumes of active ingredients in ORS packets.
10. Review licensing procedures with reference to labeling and packaging.
11. Establish a federal Drug Inspectorate.
12. Sample ORS packets to ensure representativeness of supplies.
13. Continue support to Mavo Hospital training facility.

14. Develop ORS curriculum guide for Medical College.

15. Publish Pakistani medical journal on Diarrheal Disease.

16. Significantly increase active participation of trainees during all level of training.

17. Incorporate traditional healers into ORS system.

18. Conduct promotional seminars for radio, television, journalists and pharmacists.

19. Improve supervision of paramedics by establishing clear behavioral targets to be monitored and provide supportive feedback.

20. Use existing Baseline Health Status survey to assess mortality and morbidity for diarrhea.

21. Restructure surveillance system.

22. Develop a consistent diagnosis for diarrhea.

23. Evaluate and expand if appropriate the new register being used in Punjab and Sind.

24. Enforce monthly reporting.

25. Incorporate standard age division for surveillance reporting.

26. Include reporting of production and sales figures as part of licensing requirements.

27. Report IV usage from sentinel hospitals.

28. Utilize usage data to reorganize distribution plan for packets.

29. Use specific targets to monitor success of consumer education campaign.

30. Name provincial ORT coordinators.

31. Name ORS Supervisors.

32. Conduct operations research studies on:

Diarrheal practices

Package and Logo study

Media reach and usage

Sugar and Salt

Surveillance and reporting techniques

Efficacy of antidiarrheals

Infectious agents in urban and rural areas.

I. Implementation Schedule: Mass Media Activities:

A. Research Studies

1. Diarrheal practices: Combination of document review and focus group studies done by local anthropologist, to determine:

WHAT TREATMENTS ARE COMMON NOW?

WHAT BELIEFS ASSOC. WITH DIARRHEA?

WHAT EXPECTATIONS FOR DIARR REMEDIES?

WHO IS MOST CREDIBILE SOURCE OF INFORMATION ON DIARRHEA?

2. Packaging + logo study: Field trials of visual instructions + logo for package. Comparison of several models to determine clarity, appeal, and viability. Done by local advertising firm.

3. Media research + use: Analysis of existing media reach information at PBC plus small provincial studies of impact of present ORS spots (TV + Radio) to be done by PBC research unit.

4. Sugar + salt study: Field trials to determine common obstacles to mixing S/S in village. Sampling to determine availability of common vessel + measuring instruments. Done by local advertising firm.

B. Technical Assistance

Expert in use of marketing and communication to promote ORT. Should be experienced in Asia. Arrives for 12-15 months to assist coordinate public sector campaign.

C. Contract Local Ad/Marketing Agency

AID/GOP contracts local advertising firm over 24 months to guide creative development, research, and media placement of Phase I and II.

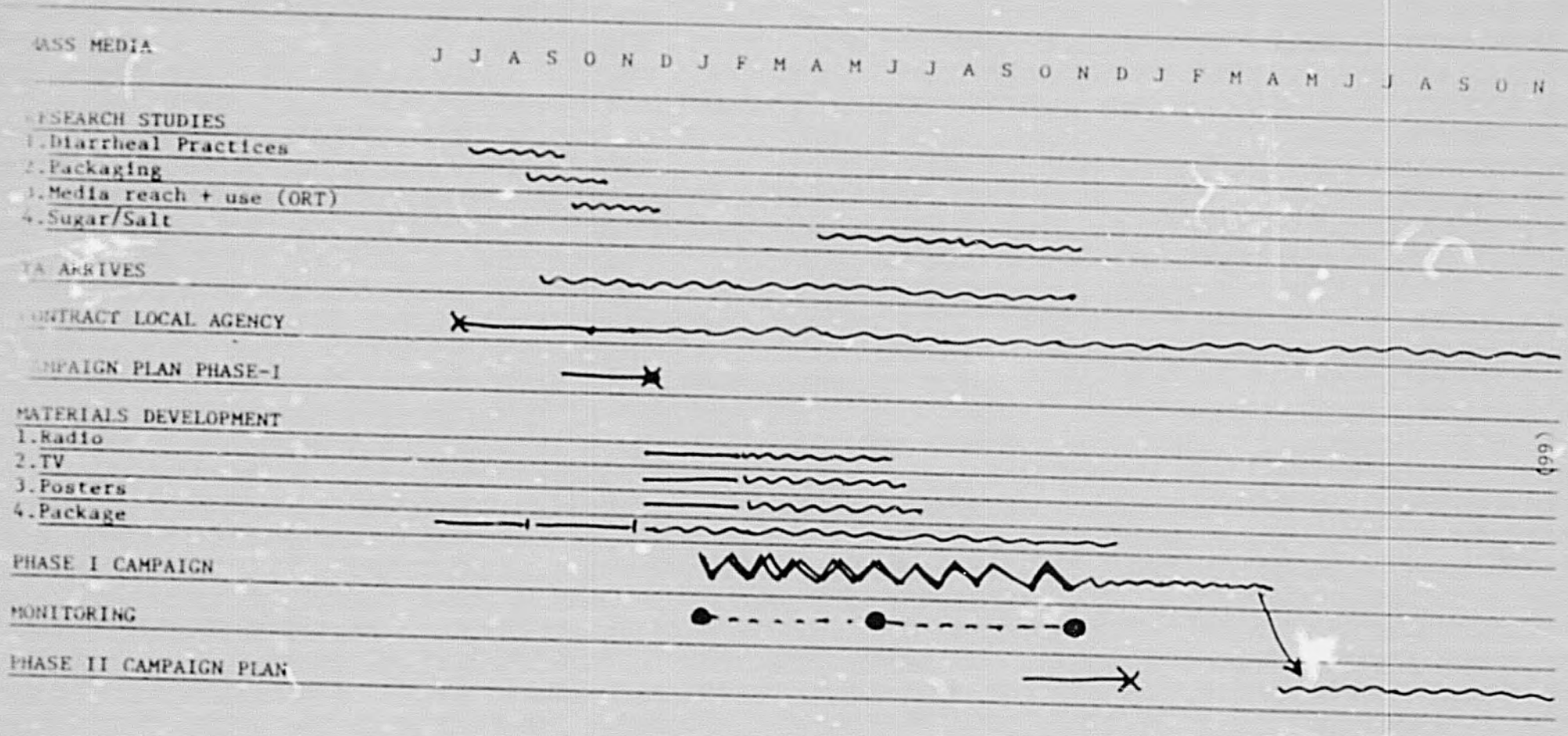
D. Campaign Plan Phase I completed, should include strategy statement, production schedule, message concepts, responsibilities and budget.

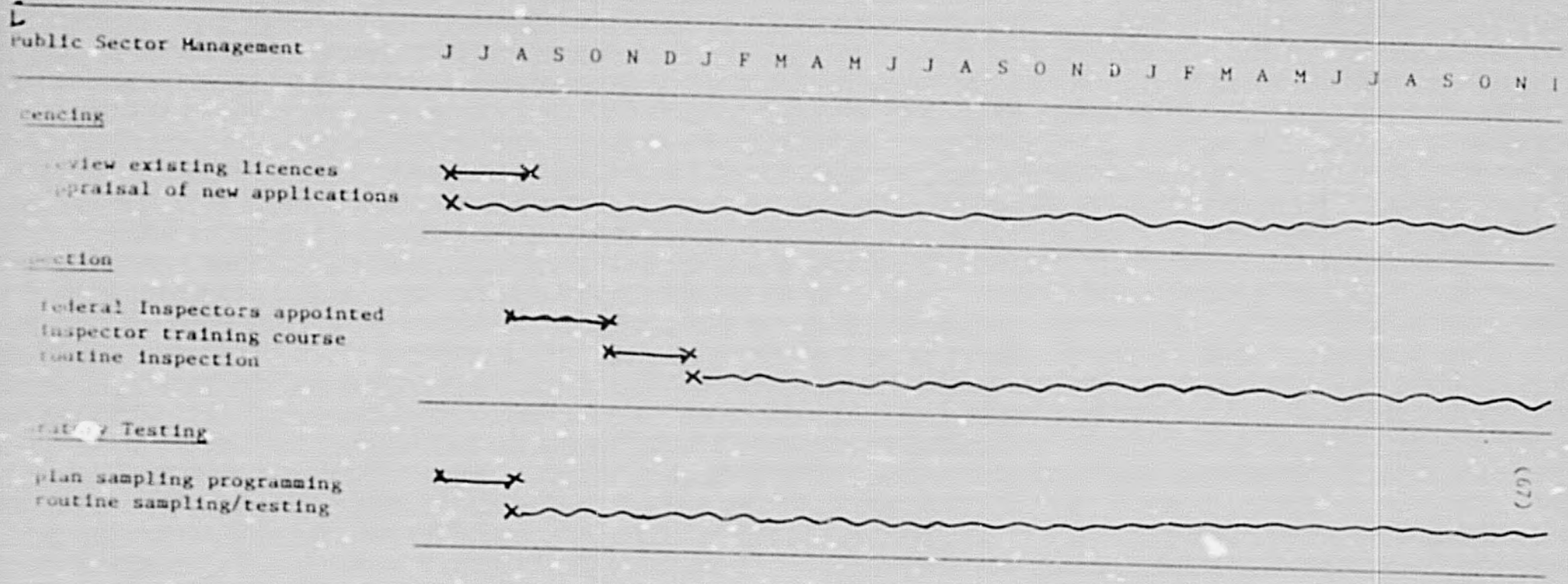
E. Materials Development includes drafts, pre-testing and final production along with actual broadcast + distribution. Broadcast schedule to reflect saturation levels fr Pakistan during April-September. Print Mat. distribution to take place during training courses.

F. Phase I campaign integrates Radio, TV, Print and training around three golden rules - "For Diarrhea: Give (1) ORS, (2) Water (Liquids) and (3) Soft Foods".

G. Monitoring at three month intervals to focus on packet sales + availability, listernership, message acceptance, obstacles, and print material availability/distribution.

H. Phace II campaign plan reflects results of monitoring studies and adds S/S as early home remedy in second phase. Continues promotion of packets as treatment for dryness.


MASS MEDIA
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N
RESEARCH STUDIES
1.Diarrheal Practices
2.Packaging
3.Media reach + use (ORT)
4.Sugar/Salt
TA ARRIVES
CONTRACT LOCAL AGENCY
CAMPAIGN PLAN PHASE-I
MATERIALS DEVELOPMENT
1.Radio
2.TV
3.Posters
4.Package
PHASE I CAMPAIGN
MONITORING
PHASE II CAMPAIGN PLAN


Public Sector Management
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cencing
view existing licences
ppraisal of new applications
ection
ederal Inspectors appointed
Inspector training course
outine inspection
Testing
plan sampling programming
routine sampling/testing

Training and Supervision	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
. Support for Mayo Hospital Training Center	X	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Create Training Center at Civic Hospital, Karachi						X	~	~	~	~	~	~	~	~	~	~														
Create Training Center at Infectious Diseases Hospital Peshawar				X	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
. Develop Supervision Model																														
2. Training Consultation	X	~	~	X																										
Short-Term Orientation																														
. Pharmacists						X		X		X																				
. Radio & TV										X																				
Journalists										X																				

Evaluation and Research	1984 J	J	A	S	O	N	D	1985 J	F	M	A	M	J	J	A	S	O	N	D	1986 J	F	M	A	M	J
1. Select a full-time national ORT Manager	X																								
2. Select a full-time provincial ORT Coordinator			X																						
Select a full-time ORS Supervisor for each district			X																						
Establish specific criteria for performance of health staff				X																					
Initiate spot checks of performance and provide feedback				X	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Consider operational research studies in health communication								X																	

Non-Standard Formulae for ORS in Pakistan

1 Pharmedic Laboratories (currently on the market)

Glucose, Anhydrous	20 g
Sodium Chloride	4.5g
Sodium Bicarbonate	2.5g
Potassium Chloride	1.5g
	28.5g

To be diluted to 1 litre.

2 Searle, Peditral (licensed but not yet on the market)

Glucose, Anhydrous	8.10g
Sodium Chloride	0.41g
Sodium Bicarbonate	0.40g
Potassium Chloride	0.35g
Sodium Saccharin	0.06g
Lemon/Lime flavour	0.68g
	10.00g

To be diluted to 250 ml.

3 Wilson's Orasal (application for license under consideration)

Glucose, Anhydrous	12.32g
Sodium Chloride	0.44g
Sodium Bicarbonate	0.42g
Potassium Chloride	0.38g
Citric Acid, Anhydrous	0.44g
Lemon/Lime flavour	0.50g

To be diluted to 250 ml.