MANUAL

FOR ASSESSMENT AND PLANNING OF

NATIONAL ORT PROGRAMS

1st EDITION

Editors:

John LeSar
Polly Harrison
Ann Buxbaum

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Technologies for Primary Health Care Project (PRITECH)

Management Sciences for Health
1655 North Fort Myer Drive, Suite 700
Arlington, Virginia 22209

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The PRITECH Project was developed by the Bureau of Science and Technology, Office of Health, of the United States Agency for International Development, to help the Agency carry out its health policies and strategies for reducing childhood mortality. The project focuses on preventing deaths from diarrhea through more effective, widespread use of Oral Rehydration Therapy (ORT), and on preventing deaths from immunizable diseases through improved immunization coverage. During the five-year interregional project, the PRITECH Group will assist about 30 host countries to improve health care services through technical assistance in project and program design, management, training, and evaluation; technical information services; and limited commodities.

PRITECH activities are coordinated with USAID missions and are often implemented in collaboration with UNICEF, WHO, CDC, private voluntary agencies, and other donors. The PRITECH Group is composed of: Management Sciences for Health (MSH), which provides the principal management of the project as well as technical specialists for various health activities; the Academy for Educational Development (AED), which provides technical direction and assistance in health communications; the Johns Hopkins University School of Hygiene and Public Health (JHU), which provides expertise in situation analysis, disease control program design and management, and program evaluation; Jeffalyn Johnson and Associates, which manages PRITECH's conferences on primary health care technologies; and the Program for Appropriate Technology in Health (PATH), which provides technical support for production of ORS.

PREFACE

The preparation of this Manual has been an evolutionary process. It began as a set of preliminary "Guidelines" prepared by five substantive task forces, for use by consultant teams who were assessing country ORT programs. After a period of use and the corresponding accumulation of experience, it was decided to incorporate the learning of that period into an updated, more formal version of the original Guidelines. Additional writers were introduced into the activity; translation into Spanish permitted modification, application, and feedback from the Central American Region; and the revised chapters were circulated for review to the individuals who are listed with appreciation in our Acknowledgments, as well as to colleagues from AID, the World Health Organization, and Johns Hopkins University.

The result is a document which we hope will be helpful as a guide to PRITECH consultants engaged in the assessment of national ORT programs and the planning of PRITECH assistance to countries; as a reference document for overall planning of national ORT programs; and, finally, as a reference document for managers to use in ongoing monitoring and periodic revision of plans. We have made every effort to be consistent with WHO Diarrheal Disease Control program policies and techniques.

We have noted on the title page that this is a first edition; we anticipate that a second edition will be necessary. Even as we go to press, we acquire new understandings, and this year's ICORT Conference will doubtless provide fresh perspectives on previous experience. We recognize that there are a number of redundancies in the volume; some derive from the nature of the subject matter, some from the necessity for each chapter to stand alone for use by individual consultants. Certain findings or conclusions may become obsolete, and there remains a great deal that we do not yet know. In sum, it is our expectation that the readers and users of this Manual will have observations and suggestions to make about both content and format. It is our hope that they will share these with us, thereby helping to make the second edition of the Manual more insightful, more complete, and more useful.

The Editors

TABLE OF CONTENTS

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SYNOPSIS

The goal of the Technologies for Primary Health Care Project (PRITECH) is "to lower infant and child mortality through the introduction and improved delivery of key disease control technologies, such as ORT and immunizations, in primary health care." PRITECH attempts to reach this goal through systematic assistance to approximately 30 countries. The assistance customarily takes place in three phases: promotion, assessment and planning, and actual technical assistance. In addition, PRITECH management organizes monitoring and evaluation activities.

This manual is directed only towards the ORT component of the PRITECH goal. Its objectives are to provide guidance to staff and consultants working in the second phase: the assessment of national ORT programs and the planning of assistance to countries. Since most countries find it difficult to implement all components of an ORT program simultaneously, this manual is also useful during the implementation phase when additional components may be added. It should also be useful as a reference document, particularly for ongoing monitoring and periodic revision of Assistance Plans.

The manual has 15 chapters. Chapter 2 contains the outline and rationale for the strategy assessment report to be prepared by the assessment team leader or a technical writer. It also sets forth those categories of technical information that must be addressed during the assessment and the structuring of the report in order for it to be responsive to AID project document requirements.

Chapter 3, reprinted from the World Health Organization Manual for the Planning and Evaluation of National Diarrhoeal Diseases Control Programmes (Geneva, 1984), provides the guidance on information needs for planning ORT programs and presents the rationales and methodologies for determining rates of diarrheal mortality, case-fatality, and morbidity.

Chapters 4 through 15 focus on specific technical areas (see Table of Contents). Each chapter contains a Background Paper which summarizes relevant experience to date, lessons learned, constraints, options, and the principal issues most likely to arise during the assessment and planning phases. These are the issues which the technical experts and reviewers identified as most likely and most crucial for consideration by assessment teams and planners. They emerge from the attempt at achieving consensus and completeness that has characterized the year's work which has gone into the preparation of this manual. In addition to the Background Paper, each chapter includes an Assessment Checklist, which contains key questions arising from the probable principal issues and which is meant to serve as a springboard for consultants' assessment efforts.

Chapter 4, "Policies, Laws, and Regulations that Affect ORT Programs," concludes that the principal issues will most probably cluster around: 1) adequacy of overall policy in terms of goals and objectives, technical content, and internal consistency; 2) availability of services; 3) ORS

formulation; 4) use of homemade solutions; 5) packet availability; and 6) the relationship of stated policies to true commitment to widespread, effective use of ORT.

Chapter 5, "The Planning of ORT Programs," treats the issues in the context of both strategic and operational planning. The chapter touches only briefly on the latter, deferring fuller treatment of operational planning issues to the individual technical chapters. Within the framework of strategic planning, the major issues concern: a) determining the magnitude, distribution, and nature of the diarrheal disease problem; b) considering the nutritional implications of diarrhea; c) identifying the current health-seeking behaviors of the population; d) estimating the current and potential supply of ORS through various channels; e) exploring the mix of home solutions and ORS packets; f) determining the potential for public education and self-care; g) assessing the acceptability of ORT to the medical profession; and h) determining the potential for commercial sales.

Chapter 6, "Financing ORT Programs," presents both a set of economic and financial questions and a series of approaches and worksheets for answering them. While the chapter can stand in isolation, it can also serve as a useful resource for all team members who need to look at financing dimensions in their own particular area of expertise; these include the areas of communications (Chapter 9), supply and distribution of ORS (Chapters 10 and 12), training and education (Chapters 14 and 15), and management of information systems (Chapter 13). The issues of primary concern for financing ORT are the following: 1) estimation of costs, which comprises the concepts of incremental costs, functional cost categories, and cost timeframes; 2) estimation of effects; and 3) consideration of economic incentives, which can be analyzed according to ORT system entities, policy impact, incentive impact, and potential impact of corrective measures; and 4) affordability and sources of financing.

Chapter 7 discusses the "Organization and Management of the ORT Service Delivery System." The organizational issues include: a) the committee; b) the staffing of the ORT unit; c) the position of the ORT program within the MOH; and 4) the on-going debate about centralization and decentralization. The major issues in program management fall into three areas: 1) the pacing of program start-up; 2) integration of ORT with other PHC, child survival, and CDD activities; and 3) the pros and cons of special incentives.

Chapter 8 addresses "Private-Sector ORT Delivery Systems." It considers two elements of the private sector: PVOs and other initiatives, with particular attention to employee benefit plans through health cooperatives, health maintenance organizations, social security plans, and insurance programs. In the area of PVOs, the key issues are: 1) replicability; 2) sustainability; 3) institution building through training, linkages and participation of consumers; and 4) benefit distribution. In considering other private-sector initiatives, the key issues are 1) designing an analytical framework for private-sector schemes; 2) balancing private cost incentives with public policy goals; 3) targetting program opportunities; 4) considering organizational structure and management; and 5) financial development and planning.

Chapter 9 deals with "Communications in Support of ORT Programs." The probable principal issues in this area will center on: 1) policy guidelines for communication planning; 2) the capability of the current ORT program; 3) knowledge and acceptance of ORT in the health community; 4) diarrhea-related knowledge, attitudes, and practices of the primary audience; 5) communications networks; 6) communications planning and production capabilities; 7) research and evaluation; 8) communications management; and 9) cost. This chapter also includes an extensive, detailed checklist for communications program planning.

Chapter 10, "Local Production of ORS," presents and explores three technical and financial issues: 1) formula and presentation, with consideration of costs, capabilities of producers, and shelf life; 2) production equipment, both semi-automatic and manual; and 3) use of locally-available ingredients. It also considers production problem-solving, with particular attention to glucose bulk density, glucose flowability, moisture content, and sealing.

Chapter 11 deals with "ORS Supply Management" and identifies three topics of primary concern: 1) strategic orientation, with consideration of treatment alternatives, importation vs. local production, distribution alternatives, and free dispensing vs. sales; 2) determining needs through population-based, service-based, and consumption-based approaches; and 3) assuring distribution in the public and private sectors.

Chapter 12 addresses the subject of "Marketing and Sales of ORS." One of the most important PRITECH findings about the development and administration of ORS/ORT programs is the usefulness of the "marketing approach" to program development and assessment. The issues of primary concern here are: 1) potential target markets and segments; 2) consumer behavior; 3) market research; 4) products and packaging; 5) distribution and sales; 6) pricing; 7) information, education, communication, and advertising; and 7) evaluation of marketing programs.

Chapter 13, "ORT Information Systems," deals with the minimal set of indicators necessary for the planning, management, monitoring, and evaluation of ORT programs and for the assessment of program effectiveness and ultimate impact. The chapter weighs the relative merits of different types of mortality and morbidity indicators and of the different methodologies for gathering data on all the indicators discussed. Indicator selection is, in itself, an issue, as are the following: 1) the matching of specific information with the appropriate users; 2) determining frequency of collection and frequency of presentation; 3) providing feedback; 4) determining use of information; 5) vertical (independent) vs. horizontal (integrated) service statistics systems and surveys; 6) how to obtain private sector data; and 7) how to validate the data collected.

Chapter 14, "Training of Personnel for ORT Programs," examines the principal issues that are likely to be encountered at three different, closely-linked programmatic levels: 1) the health provider, 2) the training programs; and 3) the training institution. At the first level, the issues will center on special courses versus in-service training, mass education and community support for ORT, training before ORS packets are available, and supervision and continuing education to support training efforts. The issues at the

second level will have to do with the relationship between training content and expected performance, linking ORT with other health concepts, competency-based materials and active learning methodologies, and length and timing of training courses. At the third level, the issues are those of degree of institutional commitment to ORT, institutional capacity to conduct ORT training, continuing education for training staff, and inter-institutional collaboration and coordination.

Chapter 15, "Education of the Health Professions for ORT Programs," gives attention to medical, nursing, and pharmacy education. The issues for each of these professional groups are different in some ways, in others quite similar. For the medical profession, the issues crystallize around the medical school curriculum and emerge from some of the less beneficial traditions of Western medical education, including over-sophistication, isolation from the public health sector and epidemiologically-determined health needs, and outmoded pedagogical approaches. The four key issues comprise the main components of the medical school curriculum: 1) basic sciences; 2) clinical teaching; 3) experiential training; and 4) community outreach. Both the methods by which these areas are covered and the sequence in which they are encountered by the student are discussed in this chapter.

Education for nursing personnel focuses on the "professional" nurse, after acknowledging that many nursing tasks are performed by people with less formal education. The major issues here are: 1) short-term retraining and supplementary training of nurses; 2) long-term restructuring of nursing education to redefine the nurse's role as support and resource as well as caregiver, and to use participatory pedagogical methods; 3) government policy and commitment to changes in nursing education; and 4) testing and evaluation of revised educational systems.

Limitations in the curriculum of pharmacists lead to lack of information about the appropriate use of ORT and lack of confidence in counseling consumers in its use. The main issues here are: 1) the need for support from the wider pharmacy community for curriculum changes; 2) the financial penalty for some pharmacists in selling ORS; 3) the role of pharmacists in the logistical system; and 4) the need for current information about ORT.

And finally, Chapter 16 presents a list of "Suggested Resources," both human and written, which are likely to prove helpful in the assessment of ORT programs. Along with the general list, appropriate for consultants in all technical areas, an additional list denotes specific resources keyed to specific chapters.

CHAPTER 1: INTRODUCTION

1.1 THE OBJECTIVES OF THIS MANUAL

The objectives of this manual are to provide guidance to staff and consultants of the Technologies for Primary Health Care Project (PRITECH), for two purposes: assessment of national ORT programs and planning of PRITECH assistance to countries - both before and during the time the assistance is taking place. The manual is also intended as a reference document for the overall planning of national ORT programs; it contains, for each component of an ORT program, a description of PRITECH and other relevant experience to date, including lessons learned, common constraints, and strategic options, as well as the principal issues that will most probably have to be confronted in the strategic planning of national ORT programs. Finally, the manual should also be useful as a reference document for managers and for ongoing monitoring and periodic revision of the PRITECH Assistance Plan.

1.2 THE GOAL OF THE PRITECH PROJECT

The goal of the PRITECH Project is "to lower infant and child mortality through the introduction and improved delivery of key disease control technologies, such as ORT and immunizations in primary health care." This manual is directed only towards the ORT component of this goal; however, it can also serve, in preliminary form, as a model for assessment approaches to other components of Child Survival programs.

PRITECH is attempting to reach this goal through systematic assistance to 15-20 countries and limited assistance to another 10-15 countries, to improve their ORT programs. There are usually three phases in country-related work in this project. Phase 1 is a promotion phase during which interest in PRITECH assistance is generated or developed. Phase 2 is a planning phase during which country programs are assessed by PRITECH staff and consultants and, depending on the results of the assessment and the interests of the country, a PRITECH Assistance Plan is developed. Phase 3 is the actual assistance phase which may last up to three years.

1.3 A DESCRIPTION OF THE REVIEW AND PLANNING PROCESS

The assessment and planning process in Phase 2 usually occurs in the following sequence. After the promotion visit(s), the USAID Mission and appropriate representatives of the host country government discuss the possibility of a PRITECH review of their current ORT efforts, with the expectation that, based on mutual agreement, the country would receive "no-cost" technical assistance and perhaps other assistance from PRITECH. If they agree, the USAID mission requests that PRITECH provide a team to review and assess current efforts in ORT, based on a scope of work developed together by USAID and the host country government. These country reviews or "strategy assessments" usually involve a team of 3-4 technical specialists who travel to the country for 2-4 weeks and review the ORT program. They produce a strategy assessment report which is given by the USAID Mission to the host country government for their review.

Based on the strategy assessment report, the host country, USAID, and PRITECH may agree that PRITECH should be asked to provide assistance to the country. At that time, one or two PRITECH staff members will travel to the country and write a PRITECH Assistance Plan based on the strategy assessment report and on discussions with the government. (In some cases, the strategy assessment report and the PRITECH Assistance Plan are produced during the same visit and combined into one report.) This plan, once approved by the USAID Mission and AID/Washington, forms the basis for PRITECH's technical assistance to the country.

Phase 3, the actual assistance, then begins. While this manual is meant to support Phase 2 activity, that is, preparation of the strategy assessment report and the development of the Assistance Plan, as indicated earlier, it should also be of utility during Phase 3, for purposes of reference, monitoring, re-design and, subsequently, evaluation.

1.4 A DESCRIPTION OF THIS MANUAL AND HOW TO USE IT

This manual is divided into sixteen chapters. After this introduction, Chapter 2 describes the outline and rationale for a strategy assessment report to be prepared by the assessment team leader or by a technical writing specialist. The outline delineates the categories of technical information necessary for both the strategy assessment report and the development of a PRITECH Technical Assistance Plan. In addition, it is formatted so that it meets other AID documentation requirements.

Chapter 3, reprinted from the WHO Manual for the Planning and Evaluation of National Diarrhoeal Diseases Control Programmes, describes the problem of diarrheal disease world-wide, providing the epidemiologic context for the technical discussions that comprise the major content of the manual.

Each of the twelve chapters following Chapter 3 focuses on a specific technical area and contains the following sections:

1. A Background Paper
2. An Assessment Checklist.

The Background Paper provides each consultant in-depth information on his/her particular topic, including a summary of PRITECH and other relevant experience to date and lessons learned, and the principal issues that are likely to arise during the assessment and planning phases.

The Assessment Checklist contains a series of questions related to each topic. The checklist is provided to guide the consultant in analyzing issues that PRITECH has found to be important from its experience to date. It is not intended to be totally inclusive or to explore each question exhaustively; rather, it is meant to help point the way, to serve as a springboard for the consultants' assessment efforts. Consultants are expected to use their expertise to supplement the checklist.

Chapter 16 provides a List of Human and Written Resources which will serve as a guide to the collection of information. The list is structured as follows: a core list suggests the resources which will be common to all topical areas; additional, shorter lists, keyed to each chapter of this manual, suggest the resources that might appropriately be tapped for each specific topical area.

CHAPTER 2: THE STRATEGY ASSESSMENT REPORT

Polly Harrison
Lawrence Harrison

2.1 INTRODUCTION

This chapter presents an annotated outline for the final report to be produced by a strategy assessment team, together with the rationale and focus for each report component. The outline encompasses the categories of technical information necessary both for the strategy assessment report and for development of a PRITECH Technical Assistance Plan. The outline format is also tailored to fit AID project documentation requirements, so that a strategy assessment can be fairly easily rolled over into an AID Project Identification Document (PID) and, ultimately, a Project Paper (PP).

The use of a standard outline for study team reporting is not intended as an arbitrary straitjacket, but simply as one logical way of presenting the results of a study team visit. The consistency among such reports that will be achieved through use of a common outline will also permit easier comparability and subsequent analysis. The flow of the report essentially starts with an elaborated diagnosis and finishes with an elaborated prescription.

The real world, however, is not as uniform as producers of standard outlines might like. If, for instance, there are already ongoing projects in diarrheal disease control, it may be necessary to address only those parts of the outline which would be directly relevant to expansion and/or enhancement of those projects. The outline can also be used in relation to partial intervention, again focusing on those aspects that are directly relevant to the intervention under consideration.

In most cases, it should be possible for the study team to substantially complete the assessment report through a combination of limited original research during the visit and adaptation of available data, evaluation results, research findings, etc. This will normally be true when there are ongoing ORT projects and PRITECH's role is one of trouble-shooting, reinforcement, or experimentation. In cases where the ORT antecedents are limited, it is unlikely that study teams will be able to complete the full report. In those cases, the report can be viewed as a first cut (along the lines of what AID calls a Project Identification Document/PID), and Section IX, "Further Analysis Required and Unresolved Issues," becomes particularly important.

2.2 OUTLINE AND RATIONALE

The outline is presented below in two forms: first summarized as a table of contents and next in annotated form.

2.2.1 Table of Contents, Strategy Assessment Report

I. EXECUTIVE SUMMARY

II. BACKGROUND

- A. Description of the Assessment
- B. General Indicators of Development
- C. Health Indicators
  1. Birth and death rates
  2. Infectious disease morbidity and mortality
  3. Diarrheal diseases and diseases preventable by immunization
  4. Malnutrition
- D. History and Current Status of the Health System
  1. Public institutions
     a. Policies, priorities, and strategies
     b. Major public subsectors and their coordination
     c. The health budget: composition and trends
  2. Key private institutions and providers
     a. Informal practitioners
     b. Cooperatives
     c. Private voluntary organizations
- E. History and Current Status of Diarrheal Disease Control Activities
  1. ORT in the public sector
     a. Policies, laws, and regulations that affect ORT programs
     b. Planning and organization of ORT programs
     c. Financing ORT programs
     d. Management of ORT service delivery systems
     e. Communications in support of ORT programs
     f. Local production of ORS
     g. ORS supply management
     h. Commercial sales of ORS
     i. ORT information systems
     j. Training of personnel for ORT programs
     k. Education of the medical, nursing, and pharmacy professions
  2. ORT in the private sector
     a. Management of key ORT service delivery systems
     b. Communications in support of ORT programs
     c. Local production of ORS
     d. ORS supply management
     e. Commercial sales of ORS
     f. ORT information systems
     g. Training of personnel for ORT programs
     h. Education of the medical, nursing, and pharmacy professions
  3. Role of key donors
  4. Public, private, and donor coordination
  5. Achievements to date
     a. Awareness of and access to ORT
     b. Use of ORT by the population
     c. Mortality impact

III. ANALYSIS OF CONSTRAINTS

A. General Constraints
B. Health Constraints
C. Constraints Specific to Diarrheal Disease Control in the Public Sector
D. Constraints Specific to Diarrheal Disease Control in the Private Sector
E. Donor and Coordination-Related Constraints in the CDD Program

IV. STRATEGIC OPTIONS

V. RECOMMENDATIONS*

A. Short-Term Recommendations to the Host-Country Government
B. Medium-Term Recommendations to the Host-Country Government
C. Short-Term Recommendations to USAID
D. Medium-Term Recommendations to USAID

VI. PROPOSED PROJECT

A. Goal
B. Purpose
C. Description
D. Outputs
E. Financial Plan
F. Role of PRITECH
G. Role of Other Donors

VII. FEASIBILITY

A. Economic and Financial
B. Managerial and Administrative
C. Logistical
D. Sociocultural

VIII. IMPLEMENTATION PLAN

A. Conditions Precedent and Covenants
B. Promotional and Educational Activities
C. Training
D. Production/Storage/Distribution
E. Construction of Facilities
F. Procurement
G. Technical Assistance
H. Other

*If no "Proposed Project" is to be generated at the time of this assessment, then the report stops here. When a proposed project is to be generated, the team will be responsible for Chapters VI - X and the "Recommendations" section is omitted.

IX. EVALUATION PLAN

X. FURTHER ANALYSIS REQUIRED AND UNRESOLVED ISSUES

2.2.2 Annotated Strategy Assessment Outline

I. Executive Summary (2 pages maximum)*

II. Background (approximately 5-10 pages)

A. Description of the Assessment

The purpose is to provide some brief background information on the assessment activity itself and who the team members were, together with their areas of expertise, and to describe the crucial dimensions of the setting in which ORT programs are to unfold.

B. General Indicators of Development

The objective is to make clear where the country is on a generally-accepted scale of international development. In addition to a brief, analytical statement about the country's economic health, this section should include:

1. Per capita GNP/GDP and equity data (where available, Gini coefficients or percentages above and below some poverty line are useful and adequate)
2. Literacy
3. Urbanism
4. Other pertinent general indicators

C. Health Indicators

It is important to provide both current data and historic trends, especially over the last five years. C.3 needs special emphasis (see Chapter 3). If the country is large, regional and urban/rural or other relevant differentiations may be desirable. Some assessment should be made of the reliability of the data.

1. Birth and death rates, including infant and child mortality and population growth rates. Five- to ten-year projections here would be helpful.
2. Infectious disease morbidity and mortality
   a. Most common causes of death
   b. Most common causes of hospitalization
   c. Most common causes of outpatient visits
   d. Diseases preventable by immunization
3. Diarrheal disease morbidity and mortality
4. Malnutrition

*Throughout this model, the suggested number of pages, single-spaced, should be thought of as a target to be modified according to the special circumstances of each country. The total of these targets is about 30-50 pages.

D. Historical and Current Status of the Health System (keep this short - 2-3 pages maximum; lists, diagram, and tables can be annexed)

1. Public institutions
   a. Policies, priorities, and strategies and how they evolved; is there a long-range health plan?
   b. Major public subsector programs and extent to which they are integrated or coordinated
   c. Structure/organogram of the public health system, including outreach entities/personnel
   d. The health budget: composition and trends
2. Key private institutions and providers
   a. Informal practitioners, including traditional practitioners and community volunteer workers
   b. Grass-root private groups (e.g., community organizations, cooperatives)
   c. For-profit organizations (e.g., pharmaceutical laboratories, medical supply producers and distributors, agents of foreign producers, pharmaceutical wholesale and retail distributors, large foreign companies)
   d. Religious organizations
   e. Private voluntary organizations
   f. Universities, nursing schools, paramedical schools

E. Historical and Current Status of Diarrheal Disease Control Activities (more important than II.D; give emphasis here, especially to E.5)

1. ORT in the public sector
   a. Current laws, policies, strategies, priorities, and goals, and how they evolved
   b. Planning and organization of ORT programs: principal public-sector implementing institutions; extent to which ORT programs are integrated with other Primary Health Care (PHC) activities
   c. Financing of ORT programs
   d. Management of the ORT service delivery systems
   e. Communications in support of ORT programs
   f. Local production of ORS
   g. ORS supply management
   h. Commercial sales of ORS
   i. ORT information systems
   j. Training of personnel for ORT programs
   k. Education of the medical, nursing, and pharmacy professions
2. ORT in the private sector
   a. Management of key ORT service delivery systems
   b. Communications in support of ORT programs
   c. Local production of ORS
   d. ORS supply management
   e. Commercial sales of ORS
   f. ORT information systems
   g. Training of personnel for ORT programs
   h. Education of the medical, nursing, and pharmacy professions

3. Role of key donors: which ones are involved and the focus and scope of their activities
4. Public, private, and donor coordination
5. Achievements to date (review key data/evaluations here)
   a. Awareness of and access to ORT
   b. Use of ORT by the population (in terms of use/coverage, disaggregated if possible by source of supply)
   c. Mortality impact (in terms of morbidity/mortality data elaborating on the II.B.3 above; in the absence of elaborating data, a cross-reference - "see II.B.3 above" - will suffice)

III. ANALYSIS OF CONSTRAINTS (2-5 pages)

The purpose is to illuminate obstacles to significantly expanded participation in ORT programs. (N.B. Politically or personally sensitive aspects of this analysis will require particular discretion in their treatment.)

A. General Constraints

This section should treat broad political, economic, and social factors that may impinge on efforts to expand ORT activities. Examples: political instability; a set of political priorities that would be incompatible with expanded ORT activity; acute economic problems, particularly with respect to the budget but also with respect to foreign exchange; popular attitudes which pose obstacles to education and delivery programs; very high illiteracy rates.

Sections II.D and II.E have already described the general health and diarrheal disease situations. This section is meant to analyze those situations and to focus that analysis on the constraints identified.

B. General Health Constraints

1. Attitudes of public sector leadership
2. Attitudes of middle-level officials
3. Attitudes of people dispensing primary health care services
4. Attitudes of medical association, nurses' association
5. Attitudes of other key private-sector actors (e.g., pharmaceutical companies, pharmacists)

C. Constraints to Diarrheal Disease Control in the Public Sector

1. Policies, laws, and regulations
2. Priorities and strategies
3. Public institutional considerations (where there are not significant problems in any of the following areas, the item need not be discussed)
   a. Planning and organization
   b. Financing
      (1) Adequacy of current financing
      (2) Budgetary projections to establish likelihood that additional resources will be available for expanded activity
      (3) Cost-effectiveness of current programs

c. Management of ORT service delivery systems
d. Communications in support of ORT programs
e. Local production of ORS
f. ORS supply management
g. Commercial sales of ORS
h. ORT information systems
i. Training of personnel for ORT programs
j. Education of the medical, nursing, and pharmacy professions

4. Private-sector institutions
   Since the focus of this section is "constraints," what is important here is what factors would make it difficult for private institutions to expand their activity.
5. Key donors
   Here the focus should be on the constraints represented by donor policies, attitudes, strategies, plans, and resource limitations, and on whether there are major problems of coordination/duplication.

D. Other relevant programs

It will be particularly important to treat other programs if the antecedents in ORT are limited. The format of II.C and D can be adapted for other primary health care programs. It is also important to indicate the degree of integration of other programs and the extent to which ORT can be integrated into these other programs.

IV. OPTIONS (2-4 pages)

The purpose here is to explore alternative broad approaches for arriving at the best option under the prevailing circumstances. If, realistically, there is only one possible strategy, it is neither necessary nor desirable to concoct straw-person options; however, there should be a clear explanation as to why only one option is being presented. Each alternative strategy should be elaborated and should also include sub-strategies as appropriate, pros and cons, and the reasoning behind selection of the proposed strategy. Some of the policy issues that might be relevant here are local production vs. importation of packets, packets vs. home preparation of ORS, the mix between public and private institutions, ways of integrating ORT delivery systems, institution-building vs. an operational focus, vertical vs. integrated programs, alternative target groups, mobilization of other donors, time frames, educational and promotional strategies, and so forth. The other chapters in this Manual are meant to suggest additional issues.

V. RECOMMENDATIONS

Most strategy assessments will end with this section. However, if Chapters VI-X are to be done, the "Recommendations" section is omitted.

VI. PROPOSED PROJECT (7-15 pages)

What follows will obviously have to be adapted to the scope of the planned intervention. A full treatment will be needed for full-fledged ORT activities; a partial intervention which modifies an existing program can be presented more briefly.

A. Goal

To lower infant and child morbidity and mortality through the introduction and improved delivery of key disease control technologies, such as oral rehydration therapy (ORT), in programs of primary health care.

B. Purpose

The purpose should generally be to achieve a target level of coverage; e.g., 50% of children under five to receive oral rehydration therapy.

C. Description

This is a section which translates a selected strategy into a description of new or expanded activities. Basically, it should answer, without excessive detail, the questions: Who are the target groups? What is proposed to reach them? Over what period of time? At what cost?

D. Outputs

These should be presented with elaboration and quantification whenever possible and should refer to both the public and private sectors.

1. Policy and legal changes
2. Organization and management changes
3. New or expanded promotional/educational activities
4. New or expanded training programs
5. New or expanded facilities and logistics systems (e.g., for production, storage, distribution, treatment)
6. New or expanded outreach activities
7. Improvements to information/research system.

E. Financial Plan or Inputs

While some narrative may be appropriate, a tabular display along the lines of Figure 1 below makes a most useful summary vehicle.

F. Role of other donors

Of particular interest here are directly relevant other-donor activities, e.g., those that are reflected in the "other donor" column of Figure 1.

FIGURE 1

	Govt.	Priv. Sector	AID	PRITECH	Other Donors
Recurrent*					
personnel					
training					
supplies					
health communications					
research/data collection/evaluation					
other operating costs					
Capital*					
construction					
vehicles					
other equipment					
subtotal					
Contingencies*					
Technical Assistance*					
Grand Total*					

*Breakdown by local currency and foreign exchange costs, for each year of project.

VII. FEASIBILITY (3-10 pages)

The basic question here is: "Can one demonstrate that it is feasible to significantly increase coverage?" This is an example of a section where the documentation produced for ongoing activities may be adequate to cover limited additional effort under PRITECH.

A. Economic and Financial Feasibility

1. Ability of the recipient government and other national sources to deliver the resources stipulated in the financial plan, particularly recurring costs. The presumption is that governments will be principally, and increasingly, responsible for recurring costs and that some alternative financial mechanism such as user charges will be emphasized.

   a. The government
      (1) Estimation of current allocation to ORT
      (2) Quantification of the additional financial burden implied by the proposed project, to give a sense of its size relative to the health and national budgets. Possible savings from more cost-effective techniques, e.g., ORT vs. intravenous rehydration, should also be discussed.

(3) Government resource allocations to prior health programs
(4) Evidence of commitment to new project
(5) Treatment of the possibility of moving toward self-sufficiency

b. Other national sources
A possible problem may be to demonstrate the feasibility of patient payment, in full or in part, for the costs of services and/or supplies. The best evidence of feasibility is a positive result in similar programs. Another issue may be the financial strength of community organizations.

c. Evidence that the overall project and its components are cost-effective. This will require examination of different strategic options and alternative ways of getting the job done, focusing on the question of comparative costs.

B. Managerial/Administrative Feasibility

Section III, "Analysis of Constraints," will already have gone some distance toward establishing the capacity of involved national institutions to handle a project of this scope. Basically, what is required here is either to point again to successful prior programs or to flaws in prior programs (e.g., in maintenance, supervision, personnel management) that will be addressed by some element (e.g., training, technical assistance) of the proposed project.

C. Logistic Feasibility

There should be evidence that production, acquisition, and distribution capacities exist. If this is not the case, then the proposed project should contain elements designed to correct the shortcomings identified.

D. Sociocultural Feasibility

The principal concern is that the project be consistent with prevailing values, attitudes, institutions, and politics. Sociocultural phenomena which get in the way of client and worker participation should be identified, including the additional burden implied for women. Once again, success of similar prior programs is a good way of establishing feasibility. If there have been no such programs, then the project should be checked out by a sociologist or an anthropologist with area or country specialization; the objective is to assure that there are not likely, serious obstacles.

VIII. IMPLEMENTATION PLAN (2-5 pages)

The objective is to demonstrate that all the important actions necessary to make the project work have been thought through and integrated into a time-phased action plan throughout the life of the project.

A. Conditions Precedent and Covenants

These are steps that governments and private participants must take either before the project starts to disburse funds ("conditions precedent") or during execution of the project ("covenants"). These may involve new policies, organizational changes, changes in law, budgetary

measures, etc. The components of the Implementation Plan will, of course, vary, according to the project design. They may include some or all of the following activities and technical assistance requirements, in either the public or private sectors or both.

B. Promotional and Educational Activities

C. Training

D. Production/Storage/Distribution

E. Construction of Facilities

F. Procurement

G. Technical Assistance

H. Other.

IX. EVALUATION PLAN (1-2 pages)

The evaluation plan should demonstrate how the key indicators of progress, derived from Section VI.B, C, D, and E, will be periodically checked to evaluate the success of project implementation. In the early stages, the principal concern will be with timely execution of VI.D ("Outputs") and VI.E ("Financial Plan/Inputs"). Later, it will be increasingly important to track the extent of increased coverage. Selective, cost-effective efforts should also be made, to get at least some sense of impact on morbidity and mortality. Basically, what evaluation during the life of the project does is to permit modification of project design to conform to the lessons of experience, or, in the extreme, to discontinue a project which is showing signs of failure. The information/research system will obviously be important in providing the data necessary for effective evaluation, and its needs should be discussed. Of particular moment is the development, at the outset, of baseline data to facilitate subsequent evaluation.

X. FURTHER ANALYSIS REQUIRED AND UNRESOLVED ISSUES

The purpose here is to help define the scope of additional work, if any, necessary to complete the project proposal and to focus on areas that will require further technical assistance for the production of subsequent project documents.

CHAPTER 3: DESCRIBING THE DIARRHOEAL DISEASE PROBLEM

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National Diarrhoeal Diseases Control Programmes

The purpose of this chapter is to highlight the principal indicators which describe the diarrheal disease problem and which, sooner or later, must serve as measures of the impact of health program interventions. Those cardinal indicators, in the context of programs centered on oral rehydration therapy, are: 1) the number of deaths (mortality) and 2) the amount of illness (morbidity) due to diarrheal disease.

These are epidemiological indicators. However, the events or conditions they describe or measure are found in a setting which, in a number of ways, shapes them, and with which they are engaged in an often unhappy synergy.

The dimension of that setting are presented in this Manual in Chapter 2 (The Strategy Assessment Report"). While the purpose of this chapter is primarily mechanical, it also serves as a framework for thinking about the causes and correlates of child mortality and morbidity; assessment teams are asked to flesh out that framework as part of their descriptive, analytical, and planning activities.

The most important of those dimensions are:

A. General Indicators of Development: e.g., income, literacy, and urbanism levels.

B. Health Indicators: In addition to child mortality and morbidity, these would include birth and population growth rates, general mortality and morbidity, nutritional status, and quality of environment indicators (access to potable water, latrines, and solid waste disposal).

C. Health System Status: e.g., the policies, priorities, strategies, and plans of the public health sector; the existence and implementation of health plans; the composition and trends of the health budget; and the structure and functions of the private sector.

D. The Current Status of Diarrheal Disease Control Activities: e.g., the organization and process of planning and implementing the various components of diarrheal disease control activities (laws and regulations, planning, financing, management, communications, production, supply, sales, information systems, personnel training, and professsional education).

Each of these will come to bear on the ability of any program to control diarrheal disease and will provide descriptions of the constraints within which such programs must operate, as well as the degree to which they achieve the effectiveness that leads to ultimate impact on mortality and morbidity. The indicators proposed to measure that effectiveness are presented in this Manual in Chapter 13, "Information Systems for ORT Programs," together with suggestions on optimum data collection and utilization.

3.1 DETERMINING DIARRHOEAL MORTALITY RATES

An analysis of mortality statistics is essential for determining the importance of diarrhoeal diseases. Traditionally used indices of national mortality are the Crude Death Rate and various mortality rates that are specific for age or cause of death.

3.1.1 Estimating the Under-Five[1] Total Mortality Rate from routine data

Diarrhoeal mortality occurs primarily in children under five years of age and, in this age group, it contributes substantially to total mortality. In many developing countries death from diarrhoea make up 20-30% of all deaths among children less than five years old. Thus, the total mortality rate in children under five is a good indirect indicator of the extent of diarrhoeal mortality.

A. To calculate the Under-Five Mortality Rate for a single year the following information is required:

1. Total deaths from all causes in children less than five years old during the year. This information may be available from death registrations for the nation as a whole or for selected areas with good registration systems.

2. Mid-year population of children less than five years old. This information can be estimated from the most recent national or regional census and appropriate adjustments for subsequent births, deaths, and migrations.

B. The Under-Five Mortality Rate for a single year is usually expressed per 1000 population and is calculated as follows:

$$\frac{\text{Deaths of children less than five years old}}{\text{Estimated mid-year population of children less than five years old}} \times 1000$$

C. The Under-Five Mortality Rate that has been calculated for many national populations, or that can be calculated from existing information, is often inaccurate due to deficiencies in the data from which the rate is calculated. The principal problems with these data are:

1. Substantial under-registration of deaths, particularly in new-borns, or no registrations at all.

[1] Throughout this Chapter, the "under-five" rate is used as an example. The same methods could be used to calculate rates in a different age group, such as the population under two years of age.

2. Extensive misreporting of the age at death or excessive proportion of "age not stated" in the death reports.

3. Inaccurate estimates of the population under five years old.

4. Limited availability and variable quality of information from different areas of the country.

Despite such inaccuracies, the Under-Five Mortality Rate is an important indicator of the health of children and an indirect indicator of diarrhoea mortality.

3.1.2 Estimating the Under-Five Diarrhoeal Mortality Rate from routine data

Direct assessment of the rate of death due to diarrhoea is also important. Since the highest diarrhoea mortality rates will be found in children less than five years old, the assessment can be limited to this age group.

A. The Under-Five Diarrhoeal Mortality Rate for a single year is based on the following information:

1. Deaths due to diarrhoea in children less than five years old. This information may be available from the national death registration system, if the cause of death is routinely and reliably certified.

2. Mid-year population of children less than five years old. This information can be estimated from the most recent national or regional census and appropriate adjustments for subsequent births, deaths, and migrations.

B. The Under-Five Diarrhoeal Mortality Rate for a single year is usually expressed per 1000 population and is calculated as follows:

$$\frac{\text{Deaths due to diarrhoea in children less than five years old}}{\text{Estimated mid-year population of children less than five years old}} \times 1000$$

C. In addition to the problem with the accuracy of mortality rates in general (described in 1.1.1C), there are additional sources of possible error in determing specific mortality rates. The most important errors include:

1. The failure to identify cause of death.

2. The failure to use standard definitions and classifications for the cause of death.

3. The existence of multiple illnesses at the time of death, making it difficult to determine a single cause of death.

D. If the death registration system does not provide accurate information on cause of death, the Under-Five Diarrhoeal Mortality Rate can be estimated by another technique.

1. The information needed for this calculation includes:

a. The Under-Five Mortality Rate, determined as outlined in section 1.1.1 A-B.

b. The Diarrhoeal Death Ratio, which is the proportion of all deaths that are due to diarrhoea. Information on the number of diarrhoeal deaths and the total number of deaths may be available in some areas of the country either because of the unusually good death registration system or because diarrhoea is recognized as an important problem. The Diarrhoeal Death Ratio is calculated as follows:

$$\frac{\text{Diarrhoea deaths of children less than five years old}}{\text{All deaths of children less than five years old}}$$

2. The Under-Five Diarrhoeal Mortality Rate can then be calculated as illustrated below:

Under-Five Mortality Rate x Diarrhoea Death Ratio

For example, if the Under-Five Mortality Rate is 100/1000, and the Diarrhoea Death Ratio is .46, the Under-Five Diarrhoeal Mortality Rate is:

$$\frac{100}{1000} \times .46 = \frac{46}{1000}$$

It is important to remember, however, that the area from which the Diarrhoeal Death Ratio was calculated may not be representative of the entire country.

3.1.3 Estimating the Under-Five Diarrhoeal Mortality Rate from surveys

Some of the difficulties in calculating mortality rates from data that are routinely collected have been pointed out. Surveys provide an alternative to the use of routine data.

There are two basic types of surveys: complete surveys and sample surveys. In a complete survey all persons or households in the area are surveyed. In a sample survey only some of the specified units in the area are selected to be surveyed. In general, the sample survey is preferred because it is less difficult, less time-consuming, and less costly than a complete survey, and if carefully designed and carried out, can be as reliable as a complete survey. An approach to a sample survey is given in section 1.5.

3.2 DETERMINING DIARRHOEA CASE-FATALITY RATES

Diarrhoea Case-Fatality Rates can be measured most easily in treatment facilities. Although only a portion of all diarrhoea cases will come to treatment facilities, and only a portion of all diarrhoea deaths will occur in facilities, the Diarrhoea Case-Fatality Rate is a good measure of the importance of diarrhoea, the importance of severe dehydration, and of the effectiveness of the current therapeutic approach.

A. The information needed to assess the Diarrhoea Case-Fatality Rate includes:

1. Total cases of diarrhoea treated in a facility. This information should be obtained from the log books or other records of the facility. To provide the most accurate reflection of the case-fatality rate, follow-up visits for the same case of diarrhoea should be excluded. This can be done if such patients are differentiated in the records, or if they are seen in a specific follow-up clinic. If a second attack occurs in the same child following complete recovery from the previous attack, this should be counted as two cases.

2. Deaths due to diarrhoea at the treatment facility. This information usually can be obtained from the same treatment centre records as the diarrhoea visits. In many instances follow-up home visits may be necessary to determine the outcome of the case.

B. The Diarrhoea Case-Fatality Rate, usually expressed per 100 cases, is determined as follows:

$$\frac{\text{Deaths at the facility due to diarrhoea}}{\text{Cases treated at the facility for diarrhoea}} \times 100$$

C. Age-specific Diarrhoea Case-Fatality Rate: Rates for different age groups should also be calculated. This will be possible if the ages of patients and deaths are recorded at the facility. For example, the Diarrhoea Case-Fatality Rate among children less than five years old is calculated as follows:

$$\frac{\text{Deaths due to diarrhoea among children under five years old}}{\text{Cases in children under five years old treated for diarrhoea}} \times 100$$

D. Diarrhoea Case-Fatality Rates can also be calculated for clinical types of diarrhoea - for example, watery diarrhoea or dysentery, or for specific etiological agents, if this information is available in the facility's records. These rates are calculated as given in the examples below:

$$\frac{\text{Deaths associated with watery diarrhoea}}{\text{Cases treated for watery diarrhoea}} \times 100$$

or

$$\frac{\text{Deaths associated with Vibrio cholerae 01 diarrhoea (cholera)}}{\text{Cases treated for cholera}} \times 100$$

E. Calculation of Diarrhoea Case-Fatality Rates is useful for evaluating current diarrhoea treatment activities and for planning a programme to reduce mortality. Since optimal therapy of watery diarrhoea with oral or intravenous fluid replacement should result in a case-fatality rate of less than 1%, a higher case-fatality rate in a treatment facility indicates the need to review and modify the treatment approach.

3.3 DETERMINING DIARRHOEA MORBIDITY RATES

In assessing diarrhoea morbidity, the most useful parameter is diarrhoea incidence, which reflects the number of new episodes of diarrhoea in a specified population over a given time, usually one year.

If the control programme focuses on children less than five years old, because they have the highest rates of diarrhoea, diarrhoea morbidity should be determined in this specific age group.

The diarrhoea incidence should also be determined in various areas of the country. This information will help to identify areas where diarrhoea is a greater or lesser problem and assist the phased control programme to set priorities for activities in various areas.

A. To calculate the Under-Five Diarrhoea Incidence Rate for a single year, the following information is required:

1. Total new episodes of diarrhoea during the year in children less than five years old. This information may be obtained from a national or regional surveillance system.

2. Mid-year population of children less than five years old. This information can be estimated from the most recent national or regional census with adjustment for subsequent births, deaths, and migrations.

B. The Under-Five Diarrhoea Incidence Rate (usually expressed as episodes per child per year) is calculated as follows:

$$\frac{\text{New episodes of diarrhoea in children less than five years old}}{\text{Mid-year population of children less than five years old}}$$

C. National reporting of diarrhoea

National statistics on the number of episodes of diarrhoea vary widely in their completeness and accuracy. The data are influenced by the availability of health facilities, financial and human resources, and the importance given to epidemiological surveillance for diarrhoea.

In many countries that have a reporting system, diarrhoea is not a reportable illness. It is rarely reported by private physicians or community health workers and, of course, the large number of diarrhoea cases that do not seek medical attention are never reported. Thus, national statistics on the number of cases of diarrhoea are always under-estimations of the actual number, often by a factor of between 100 and 1000 to 1.

For the purpose of assessing diarrhoea morbidity it is recommended that the number of reported episodes of diarrhoea be reviewed, but that the above limitations be kept in mind. It is also desirable to look for villages, groups of physicians, or health facilities that are reporting a high proportion of their diarrhoeal episodes. These reports may provide a better indication of the actual diarrhoea incidence.

D. Review of health facility case records

Because of the incomplete reporting of even the diarrhoea episodes that come for medical attention, it is advisable to review the records of a sample of health facilities to determine as completely as possible the number of cases of diarrhoea, especially in children under five. An accurate calculation of a facility's number of diarrhoea cases from a complete review of the records can be compared with the number of reported cases to determine the proportion of cases that were actually reported. This information, obtained from several facilities, can help to estimate the percentage of under-reportings.

From such a record review it should be possible to determine the total number of visits to the facility and the number of visits for diarrhoea by age group, and thus the proportion of visits because of diarrhoea, which would be calculated as follows:

$$\frac{\text{Cases of diarrhoea in children under 5 years old seen at the facility}}{\text{Total children under five seen at the facility}}$$

3.3.2 Estimating diarrhoea incidence from surveys

As pointed out, the cases of diarrhoea treated in health facilities represent only a small fraction of all cases of diarrhoea. Routine surveillance systems rarely provide an accurate or dependable measure of incidence. A more useful estimate of the incidence of diarrhoea can be obtained by visiting households and inquiring about the occurrence of diarrhoea. Special surveys of this type must be carefully designed to obtain accurate information with an minimum expenditure of time and money. A suggested survey method is described in section 1.5 [of the source document].

3.3.3 Estimating diarrhoea etiology rates

If laboratory facilities are available, it may be useful to examine the diarrhoea incidence rate associated with various enteric pathogens. The role played by the various bacterial, viral, and parasitic agents in the overall diarrhoeal problem may, in part, determine what control activities are planned. For example, if cholera has occurred in recent years, it is advisable to make specific plans for the treatment of cases of severe dehydration and cholera control measures in case of a future epidemic. It should be noted that planning for the expansion of the use of oral rehydration therapy will not usually be affected by the outcome of studies of etiology and should not await the results of such studies.

A. To determine the frequency of occurrence of the etiological agents associated with diarrhoea, the following information is necessary:

1. The total number of stool cultures done and organisms sought.

2. The number of cultures positive for Escherichia coli, Salmonella, Vibrio cholerae 01, rotavirus, or other etiological agents.

B. From this information it is possible to calculate the percentage of diarrhoea episodes associated with specific pathogens - for example, Vibrio cholerae 01 - as follows:

$$\frac{\text{No. of stool cultures positive for Vibrio cholerae 01}}{\text{Total stool cultures tested for Vibrio cholerae 01}} \times 100$$

C. For a better understanding of the diarrhoea etiology, the following points should be considered:

1. The type of patients tested. For example, if dehydrated, hospitalized patients are tested, the distribution of etiological agents may differ from that obtained if outpatients with milder illness are tested. This is because some pathogens, such as Vibrio cholerae 01, may be associated with more severe illness than others, and may predominate if only severe cases are studied.

2. The age of the patients studied. Age can be an important determinant of what etiological agents will be found. Some organisms, such as rotavirus, affect primarily children less than two years old and after that age are found relatively infrequently. Thus, any study of the etiology of diarrhoea must consider the age of the patients, who should be grouped in at least two categories:

   a. children under five years of age

   b. older children and adults

3. Year-to-year variations in the frequency of various etiological agents. It is desirable to examine data collected over several years to identify any consistent trends in the relative proportion of different agents. It is also desirable to examine data for an entire year, to make sure that they are not biased due to seasonal variations.

4. Seasonal variations in the occurrence of etiological agents. It is necessary to analyze the onset of cases by agent and by month to detect seasonal fluctuations and to provide a baseline. Changes in the frequency of identification of a particular agent, which may indicate an epidemic, can then be detected.

CHAPTER 4: POLICIES, LAWS, AND REGULATIONS THAT AFFECT ORT PROGRAMS

John LeSar

4.1 INTRODUCTION

In assessing ORT programs, it is important for assessment and planning teams to review national development and health policies, policies of professional bodies, and policies of relevant non-governmental organizations. The review of national health policies, laws, and regulations should encompass primary health care; child survival; diarrheal disease in general; case management with ORT; multiple delivery systems; and ORS, with regard to supply, formulation, distribution, pricing, packaging, and multiple commercial products.

Any discussion of policies, laws, and regulations must, of course, look beyond the formal statements of intent to how these are actually carried out in any given country. True commitment to equity, health, primary health care, and child survival is more important to the success of ORT programs than clear policy statements. This commitment is best ascertained by the actual expenditure of funds to support social programs (see Chapter 6, "Financing ORT Programs," for discussion). In some instances, there may be no formal policy in a given area, but established practices (particularly those determined by budgetary allocations) may exert control over the relevant programs. In other instances, formal policies may exist on paper but implementation may be weak or non-existent. And, of course, there are some cases where commitment is strong and policies have been both formalized and spelled out in implementation activities.

4.2 EXPERIENCE TO DATE/LESSONS LEARNED

4.2.1 Summary of PRITECH and Other Relevant Findings

A. National Development Policies

National development policies may affect ORT programs through their economic and social ramifications, especially with regard to the geographic, ethnic, and class-related distribution of benefits of government programs. In addition, overall government policies toward self-reliance, use of technology, and community participation cut across sector lines. While policy statements may sometimes reflect the true situation, a more accurate portrait often emerges from taking a broad look at government social-sector spending by categories (including health), with particular attention to regional and urban-rural differences. It is this kind of analysis that most clearly reveals the views of the decision-makers in a country.

Experience to date is varied, but it is commonly reported that overall national development policies, as reflected by government spending patterns in the social sector, often favor urban upper (and sometimes middle) classes and dominant ethnic groups. When there are imbalances in funding, it is generally the rural, preventive, and primary health services and their ORT

programs that fall short. Under such conditions it may be difficult to achieve widespread effective use of ORT in some countries unless private-sector health delivery and commercial sales systems are mobilized to distribute ORT in rural areas and to low-income groups.

B. Primary Health Care Policies

Primary health care (PHC) policies may affect ORT programs through their emphasis on a more equitable distribution of health resources, community participation, prevention, use of appropriate technologies, a multi-sectoral approach to health, decentralization, and use of community-level and paramedical workers. Experience to date indicates that while most countries have adopted PHC policies on paper, the actual implementation of PHC varies widely, often showing slow progress in the trend toward a more equitable distribution of financial resources, along with resistance to decentralization and meaningful community involvement.

C. Child Survival Policies

One important health goal for the developing world is improved health status for children under the age of five years. This is the group that suffers excessive mortality relative both to other age groups in developing countries and to children in the developed world. Reducing mortality in children under five has been stated more affirmatively as improving child survival. AID, along with UNICEF and other donors, is aggressively promoting improved child survival through support of such services as ORT, immunizations, growth monitoring, and family planning. The countries where assessments have been carried out lie along a continuum: at one end are countries with neither a stated nor operational Child Survival policy, while at the other end are the few which have adopted explicit national policies and have implemented these policies through a package of interventions. Most countries fall in the middle: they have stated policies that favor the 0-4 child but the distribution of financial and manpower resources in fact often favors some other group or groups - the working class, urban adults, the elderly, or others.

Further, no matter where a country falls on the stated/operational policy continuum, the particular programs emphasized are unlikely to include the entire child survival package. Most countries have policies favorable to growth monitoring, breastfeeding, and immunizations in general, but the picture is more mixed when it comes to ORT, measles immunization specifically, food supplementation, female education, and family planning.

D. Diarrheal Disease Policies

WHO recommends four strategies for Control of Diarrheal Disease (CDD) programs that aim to reduce diarrheal disease mortality and morbidity and increase coverage with diarrheal-related health services: case management with ORT, strengthened maternal and child health practices, improved environmental hygiene, and epidemic control. Most of the countries visited to date have policy statements that include all or some of the CDD

strategies. Even where these policies exist, however, implementation is generally in the early stages, and, as in the case of the Child Survival programs, there is often a wide discrepancy between policy statements and actual strategies, plans, organization, and financing of the diarrheal disease programs.

Of the four WHO strategies, case management is surely central in improving child survival. There are several critical policy issues to be considered here. The first is the use of home-prepared solutions vis-a-vis ORS packets. In this regard, it is important to keep in mind the WHO policy: that ORS packets with the WHO-recommended formulation are the preferred treatment for children with diarrhea and dehydration. For children with diarrhea without dehydration, home-made solutions or encouragement of increased intake of soups and other calorie-rich, fluid-rich foods are recommended. PRITECH supports this policy without reservation but with acknowledgment that diarrhea may occur 24 hours a day, 365 days a year, and that ORS packets may not always be available. Wherever availability is limited, then, families need to know how to mix home-made solutions correctly so they can treat dehydration until they have access to packets and/or health workers.

The second issue is the need for a clear policy promoting ORT as the first-line treatment at all service delivery units, except when a child is severely dehydrated and/or semi- or unconscious. This is crucial for acceptance of ORT. If, for example, the policy at major hospitals is to use intravenous therapy as the first-line treatment, ORT may well be perceived as a second-class alternative.

Equally important is a clear government policy on feeding during diarrhea and during use of ORT. PRITECH's policy on this issue is that "ORT = ORS + appropriate feeding." Diarrhea is not only a direct cause of death but also an important contributing cause to malnutrition which increases mortality from other diseases. Only 1-2% of episodes of diarrhea result directly in death; the 98-99% of children surviving a particular episode may, however, become so nutritionally depleted that they eventually succumb from repeated bouts of diarrhea or from an infectious disease. Thus it is crucial to maintain feeding during diarrhea and during use of ORT even when appetite is diminished. After the diarrheal episode, frequent compensatory feeding is important.

Assessment teams have found that some, but not all, countries have clear policies about these important case management topics. Where packet-only policies exist with free distribution, it is rare to find that a country has adequately considered the medium- or long-term financial implications.

E. Policies Concerning Integration of ORT with Other Programs

Assessment experience confirms the WHO view that a policy which supports a vertical ORT program at the upper levels gives some evidence of a genuine national commitment to diarrheal disease control. There are, of course, exceptions - in Costa Rica, for example, diarrhea has been largely controlled

through a program which is integrated at all levels - but in general, the WHO view has been borne out in almost all assessments. At lower levels, however, a policy of integrated programs offers the strongest support for diarrheal control. The ORT program must be consistent with the other elements of a child survival strategy described above. In particular, integration of ORT with growth monitoring provides the best chance of identifying malnourished children and reaching out to them with ORT.

F. Policies Concerning Multiple Delivery Systems

In many countries, the private health system, through both PVOs and direct private practice, may be responsible for a major portion of primary health care, as well as for secondary and tertiary care. Team findings indicate that health services relevant to diarrheal control - direct care, packets, training, etc. - are often being delivered outside of the government health system. The private system may well include traditional practitioners of many kinds, including herbalists and TBAs, as well as physicians. The extent to which these practitioners are regulated, accredited, and controlled will be a determining factor in the design of training programs, evaluation procedures, and media approaches.

Furthermore, few countries acknowledge the key role of systems other than the MOH, and even fewer have explicit policy statements on the benefits of multiple delivery system approaches. Ignoring the importance of these parallel delivery systems can greatly undermine the effectiveness of ORT programs. Existing or potential delivery systems to be considered include:

- o non-health public-sector agencies such as the Ministries of Education (schoolteachers), Agriculture (extension agents), or Defense (military health workers who often treat civilians as well as military persons and their dependents);
- o the private non-profit sector, including cooperatives, private voluntary organizations (PVOs), and religious institutions;
- o for-profit hospitals and other medical organizations;
- o individual practitioners in private practice, including traditional medical practitioners.

G. ORS Formulation Policies

The presence or absence of ORS formulation policies may affect ORT programs by limiting or encouraging a variety of formulations and packaging instructions that exist in a country. In fact very few countries have policies, laws, or regulations that meet the WHO standards for ORS formulation. Countries which do have such regulations include Niger, Chad, Haiti, and Burma. In most countries, (including the US), the lack of clear policies has engendered a variety of formulations found in commercial and, in some cases, public-sector products; some formulations have actually proven to be hazardous because they contained too much sodium.

H. Policies Concerning Manufacture and Supply

ORS may be supplied through local production, importation, or a mix of both. The determination of the supply source may be affected as much by tax, foreign exchange, and industrial policies as by production capacity. Experience to date reveals that many countries have supply policies that adversely affect local production, especially on a large scale, and favor procurement, especially through donor sources. For example, most countries permit tax-free imports of ORS through donor sources, but impose taxes on imports of ORS procured commercially for use by the public and private sectors. Of countries visited to date, nearly all are receiving UNICEF packets free of charge for their public-sector delivery systems; often local producers must compete with free UNICEF supplies.

As a further deterrent to local production, the ingredients for ORS are almost universally defined as "chemical grade" rather than "food grade" and are taxed when they are imported. Since few countries can produce chemical-grade anhydrous glucose, sodium bicarbonate, trisodium citrate, potassium chloride, or foil laminate packaging material, these tax policies tend to keep donor supplies lower in cost even when they are procured unsubsidized rather than donated.

Besides import tax policies, foreign exchange policies may restrict importation of either ORS packets or ORS ingredients from foreign commercial sources. In addition, even in countries where manufacturing capability exists, many governments' industrial policies toward the private sector in general, or the pharmaceutical sector specifically, adversely affect the production of ORS.

In looking at supply policy it must always be kept in mind that the overriding issue is ultimately availability of ORS. No matter what the supply policies are, it is absolutely crucial that the stock of supplies be adequate to meet not only current but future demand, allowing for both natural increases in demand and increases created by ORT campaigns.

I. ORS Distribution Policies

The distribution of ORS to families is as crucial as is the supply of ORS to ORT programs. Since diarrhea can occur at any time, it is important that ORS be available to families as near to 24 hours a day, 7 days a week as possible, and be obtainable within manageable distances. Assessment teams have found that public-sector distribution can seldom meet these criteria in most countries; this makes it very important to have multiple distribution channels and as many distribution points as possible. Distribution channels may include non-public-sector delivery systems such as PVOs and cooperatives, and commercial suppliers to pharmacies, doctors, and retail stores. Distribution points may include, at the village level, community-based workers, traditional practitioners, and perhaps village shopkeepers; at the local level, government clinics, pharmacies, doctors' offices, and shops; and at the district level, all the above plus local hospitals.

An important policy area affecting ORS distribution is how the government categorizes ORS: as an ethical product, available on prescription only from pharmacies or health delivery units; as an over-the-counter (OTC) product sold in pharmacies, "medicine shops," or drug stores; or as a food item widely sold in many kinds of shops. As mentioned earlier, these distinctions can have a great effect on the availability of ORS to families. However, experience to date indicates that many governments do not yet have an explicit policy on the categorization of ORS. The most common finding is that ORS is available as an ethical drug by prescription from private physicians and organized non-government health systems such as PVOs. In many countries, it is also likely to be available in pharmacies as an OTC item and through trained community health workers and public-sector paramedical workers, but not through retail outlets, traditional practioners, or paramedical workers in the private sector. In only a few countries is ORS available as a food item in retail outlets.

J. Policies concerning Pricing, Packaging, and Multiple Commercial Products

The availability of ORS can be greatly influenced by government policies toward commercial sales, especially in regard to pricing, packaging, and multiple products. Assessments have shown that policies favoring sales of ORS generally increase its widespread, effective use. Families of varying income levels will purchase ORS if they understand its benefits, if it is readily available, if it is attractively packaged, and if it has a range of prices that does not exclude the poorest segment of the population.

Pricing policies can strongly influence the incentives of the private sector to promote sales of ORS, but because ORS is a low-cost product, pharmacists and retail outlets are reluctant to sell it if the profit margins and the absolute profit per unit of sale are low. Thus, government price and/or profit margin ceilings can dramatically reduce incentives for retailers to sell ORS, especially since consumers usually purchase only a few packets at one time.

Government policies toward packaging may also have a strong influence on sales and use of ORS. It is obviously important that governments establish policies on instructions for using ORS and for discarding it. Some governments may want to require pictorial instructions for non-literates. As to packaging for increased sales, commercial systems know that attractive packaging targeted to the potential user promotes sales; they are willing to raise prices to cover the additional costs. Government price ceilings and other restrictive regulations may prohibit attractive packaging and hence reduce sales. Assessment teams found that few countries have regulations for instructions on the use of ORS and that price ceilings on the product exist or are being considered in many countries, sharply limiting the potential for promotional packaging.

Government policies toward multiple products are equally influential on sales. While research on commercial sales of ORS is limited, experience with commercial distribution of other products strongly suggests that multiple products appealing to different target groups will give more sales, and more use, than a single product. On the basis of this experience, PRITECH believes that policies allowing multiple ORS products with the same formulation will likely yield wider use of ORS than policies that allow only a single product. In this context, the finding was that many governments

have philosophical problems applying the concepts of market segmentation and multiple products with variable packaging and costs to the distribution of socially useful products. Their policies reflect this reluctance, limiting the availability of multiple products and lowering overall sales of ORS.

K. Policies of Professional Bodies

Policy support and true commitment from professional bodies - especially the medical profession - are crucial to program success. Such professional bodies as the national medical association, the national pediatric society, the pharmaceutical organization, and the board or organization that sets policy for medical education play a critical part in the acceptance of ORT. Assessment teams have observed that, although some national associations have developed policy statements favorable to the use of ORT as a first-line treatment for acute diarrhea, most have no such stated policy, even if their attitude is generally favorable. Few associations have as yet strongly endorsed ORT and promoted its acceptance within the health community or in the curriculum of professional schools.

L. Policies of Non-Government Organizations

Relevant non-government organizations include PVOs and cooperative societies which deliver health, food, and relief services. They include both indigenous and world-wide organizations such as CARE, CLUSA, the Red Cross, etc.; the dominant religious organizations; and women's organizations. Experience to date suggests that these groups have only rarely established formal policies towards ORT. They are, however, generally supportive, and many are beginning to establish ORT programs.

4.2.2 Summary of Constraints

Overall, assessment and planning teams have found in many countries a number of common policy, legal, and regulatory constraints to the achievement of widespread, effective use of ORT in children under five on a national basis. The most important of these are listed below:

A. While policy statements may be supportive of the ORT program, the required budgetary support is often lacking, especially for rural services and services for the poor.

B. Policies regarding case management with ORT usually neglect the nutritional aspects of acute diarrhea.

C. Policies seldom consider the medium- and long-term costs of free packet distribution.

D. Current policies rarely encourage use of the multiple private-sector health delivery systems that provide a substantial amount of care in virtually every country.

E. Regulations requiring chemical-grade ingredients for ORS greatly hinder local production in many countries.

F. Free donor imports often prevent local producers from competing and thereby discourage local production of ORS. This is especially true in countries where ingredients must be imported and local producers must pay the import taxes.

G. Considerable variation exists in ORS formulations, especially regarding sodium concentration. WHO has not yet established a safe range of sodium values to help countries develop clearer policies on formulation.

H. Most governments rely extensively on public-sector distribution and have not set policies that support multiple channels and multiple distribution points for ORS.

I. Few governments have a policy that defines ORS as a food item that can be sold in stores.

J. Government policies on pricing, packaging, and multiple commercial products for ORS often affect sales adversely.

K. Governments have generally not given enough attention to attaining favorable policy statements and commitment from professional bodies, especially the medical profession and key non-governmental health organizations.

4.2.3 Summary of Options

A. To promote ORT alone or ORT within a framework of child survival and other CDD strategies.

Since the ultimate goal is improved child survival (reductions in infant and child mortality), it is usually preferable to espouse a broader set of policies that includes at least measles immunizations and tetanus toxoid for young women prior to pregnancy.

B. To encourage the use of packets only, home-based solutions only, or a mix of both.

It is preferable in almost all countries to elect the combined approach, using home-based solution at the onset of diarrhea and packets if diarrhea continues or becomes severe.

C. To provide ORT through the MOH delivery system only or through multiple delivery systems.

The decision on this policy option should reflect the usual sources of care of the target population.

D. To encourage local production, imports, or a mix of both.

In the short run, the policy option chosen must be able to meet current and forecasted demand.

E. To foster use of the WHO formulation only or WHO plus others.

The WHO formulation specifies a sodium content which is both lower and higher than some other ORS preparations contain. Athough the WHO option is currently preferred, it may become clear at some later time that there is a wider acceptable range for sodium; in that case, other formulations may well be equally valid.

F. To distribute ORS through a single-channel or multiple-channel system.

Whatever option is chosen, the goal should be to make ORS supplies always or nearly always available to families within a reasonable distance of their homes.

G. To declare ORS as an ethical, OTC, or food product.

In choosing the preferred option, tradeoffs between maximum availability and safety must be weighed. In addition, consideration must be given to the fact that many people consider medicine more effective and therefore more valuable than foods or OTC products.

H. To distribute free packets or to provide subsidized, controlled, or market pricing.

The choice of an option here should consider how best to achieve widespread, effective use of packets with maximal access by the poor; this will hinge greatly on the ability of the government to afford free packets for all cases of diarrhea.

I. To legislate one kind of packaging and a single product or to allow multiple packaging and products.

The choice of the preferred option will need to take into account tradeoffs between medical and commercial practices.

J. To seek medical society and non-government support or to rely only on the public sector.

Recognition of the key role of professional bodies in fostering use of ORT suggests that the preferred option is to seek support from the medical societies and other non-governmental organizations.

4.3 PROBABLE PRINCIPAL ISSUES

Assessment teams need to consider six major issues pertaining to policies, laws, and regulations: adequacy of overall policy, availability of services, ORS formulation, use of home-made solutions, packet availability, and commitment.

4.3.1 Adequacy of Overall Policy

The questions here are whether the ORT policies described in the previous section are expressed in terms of overall goals or objectives that are targeted, time-bound, and objectively verifiable; whether the technical

content of the policies accurately reflects the magnitude, distribution, and nature of the diarrheal disease problem; and whether the policies are internally consistent in promoting the widespread, effective use of ORT.

A. Goals and objectives

If the ORT policy statement is to be useful as a framework for programs, it must be "actionable" in the sense that planning can be based on it. This implies that it includes an overall goal and/or objective with a clear working definition and a target. PRITECH's policy statement, for example, is to "promote widespread effective use of ORT," with a working definition and target that state: "Widespread effective use of ORT exists when 50% of eligible families know when to give ORT, how to mix home-made solutions and/or packets of ORS correctly, have ready access to ORS packets, know when to refer a sick child with diarrhea to a worker; and when they adopt improved feeding behaviours."

B. Technical content

The ORT program should be consistent with or part of a broader effort to minimize child deaths from competing risks. Government policies should include such key mortality reduction interventions as tetanus toxoid in pregnancy; improvement of antenatal care and of labor and delivery practices; and immunizations, especially for measles. The government's policy must state clearly that ORT is to be the first-line treatment for diarrhea at all service delivery units except in cases of severe dehydration, semi-consciousness, or unconsciousness. There must also be a clear policy promoting feeding during diarrhea and during ORT.

C. Internal Consistency

There can be no workable operational policies unless the various components of the ORT policy statement are internally consistent; contradictions between internal policies are bound to have an adverse effect on the achievement of widespread, effective use of ORT. Examples of internal contradiction among policy elements are common: between policies governing delivery systems and those governing the supply and distribution of ORS; between commercial sales and pricing policies and overall policy goals; or between hospitals' intravenous treatment policies and broad policies supporting ORT as first-line treatment.

4.3.2 Availability of Services

The issue here is whether government policies on the availability of services reflect the actual proportion or share of services contributed by major service-provider groups or individuals. If, for example, government clinics provide 35% of all care, private voluntary organizations 15%, modern physicians 15%, pharmacists 10%, and traditional practitioners 25%, government policies should support the provision of ORT through these groups in a rough ratio to the proportion of services they offer. In order to support proportional distribution of ORT, there should be training programs or plans to train all kinds of service providers.

4.3.3 ORS Formulation

Formulations for ORS constitute a priority area for study by PRITECH staff and consultants. The key questions are what formulations exist in a given country, whether they meet WHO standards, and whether the government has an explicit policy on the formulation of ORS. The team should consider both formulations containing sodium bicarbonate and those containing trisodium citrate. In addition, it is important to review government policies on packets as compared to tablets and on approved volumes, e.g., 1 liter, 1/2 liter, etc.

4.3.4 Use of Home-made Solutions

Government policy in this area should reflect the WHO policy: ORS packets with the WHO formulation for children with diarrhea and dehydration; and home-made solutions or increased food and fluid intake for children with diarrhea but without dehydration. This general policy should, however, be supplemented by a policy that teaches families how to use home-made solutions for dehydrated children if the availability of ORS cannot be guaranteed at all times.

4.3.5 Packet Availability

In considering how government policies affect the availability of packets to families, one must first determine whether ORS is considered a prescription item, a non-prescription over-the-counter drug available in pharmacies, or a food item available in stores. PRITECH generally recommends that ORS eventually become a food item in most countries, if public education campaigns can transmit the necessary knowledge and skills to families. If so, it can be sold in stores as well as being made available at health centers and pharmacies. The resolution of this issue will influence the number of distribution channels and distribution points and greatly affect packet availability.

The ultimate issue here is the effect of pricing policy on packet availability. A solid, long-range plan must be made for distribution of packets to the poor, consistent with government policy: either free provision of ORS or subsidized, controlled, and/or market pricing, with accompanying concern for profit margins and actual profits. A rational, consistent pricing policy might well emerge from price-testing studies to indicate the extent to which ORS packets will reach target markets and to determine whether there is a price at which it can be assumed that the poor will purchase ORS.

Government policy regarding multiple commercial products can also have a powerful effect on packet availability. Experience suggests that a policy allowing a variety of ORS brands may be more likely than generic ORS to appeal to different target groups, yield higher sales, and ultimately result in more widespread use of the packets. This is, of course, contingent on the ability of all commercial distributors to meet the formulation established by the government.

4.3.6 Commitment

The issue here is the relationship of stated policies to true commitment to achieve widespread, effective use of ORT. To study this issue, the national development and health policy statements (including primary health care, child survival, diarrheal disease, and ORT) need to be compared to the statements of health leaders, to the positioning of the ORT program in the MOH, and to estimates of financial resources available to the ORT program.

POLICIES, LAWS, AND REGULATIONS

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 4.

1. How do national development policies and the national budget affect the achievement of widespread, effective use of ORT in the country?

2. What are the policies and expenditures on primary health care and child survival? How do they affect achievement of widespread, effective use of ORT?

3. What are the policies on CDD? What is the place of ORT in the context of CDD?

4. How adequate is the overall policy of the ORT program? Does it have a clear, operational policy statement that includes goals and/or objectives with a clear working definition, clear targets, and a time frame for achieving them?

5. What policies affect the technical content of the ORT program, especially regarding ORT within the broader child survival effort, ORT as a first-line treatment, and appropriate feeding during and after the diarrheal episode?

6. Are policies affecting the ORT program internally consistent?

7. How do policies on the availability of services affect the ORT program? Does the government see its role as an overall coordinator of health activities in the country, including other service delivery systems and individual practioners, both modern and traditional? Do MOH policies encompass other government activities in health (for example, the Ministry of Education, which may have responsibility for training of doctors, nurses, and pharmacists and for training of teachers in school health matters)?

8. How do policies and regulations on ORS formulation affect the ORT program? Is there one standard formulation or a range? Is the citrate formulation approved? Are some of the existing formulations potentially hazardous?

9. What are the policies on use of home-made solutions? Are the policies realistic, given the need of having ORS available to families nearly all of the time?

10. What are the policies on the supply of ORS? How is local production affected by import tax, industrial and foreign exchange policies? Are chemical-grade ingredients required? What is the effect of donor imports on policies of local producers? Is there any policy to phase in local production or reduce donor dependence?

11. What are the policies on ORS distribution? Is ORS considered an ethical product, an OTC drug, or a food item? How do the policies affect the number and variety of distribution channels and distribution points?

12. What are the policies, laws, and regulations regarding pricing of ORS? Does the government have a policy of free distribution? Does the government subsidize the product? If ORS is sold, does the government control the price, profit margin, and/or absolute profit through regulatory mechanisms?

13. What are the policies and regulations regarding packaging? Are there standards for the messages on the packets? Is a variety of packaging allowed? Do pricing regulations affect the packaging?

14. What are government policies regarding multiple products? Do they all have to have the same formulation?

15. What evidence is there of government commitment to its policy statements?

16. What are the policies of the medical and pediatrics societies and what seems to be their commitment to ORT?

17. What are the policies of the pharmaceutical societies and pharmaceutical manufacturing association toward ORT?

18. What are the policies of key non-governmental delivery systems toward ORT? What seems to be their actual commitment?

CHAPTER 5: THE PLANNING OF ORT PROGRAMS

John LeSar

5.1 INTRODUCTION

There are two aspects to planning: strategic and operational. Strategic planning may be defined as that phase of the planning process where broad strategies and resource requirements are set, based on the goals and overall objectives of a program. Strategic planning usually describes the roles and relationships between major components of a program and results in the overall orientation and resource flow of the program. For ORT programs, strategic planning first requires the determination of the roles and relationships of the health services delivery systems, both public and private; public education; commercial sales; professional education; and ORS production/procurement and supply systems. These roles are then related to the goals, overall objectives, and resources of the ORT program, and to one another.

Operational planning may be defined as that phase of the planning process where specific targets and activities are planned and specific resource requirements set, based on the objectives of each component of the program. Operational planning usually describes the activities within components and results in the specific job and resource requirements of each component. For ORT programs, operational planning involves the activities within the relevant systems: health service delivery, public education, commercial sales, etc.

This paper will discuss in detail only the strategic planning and broad operational planning issues. The specific operational planning issues for each component are touched on here and fully discussed in the appropriate chapter.

5.2 EXPERIENCE TO DATE/LESSONS LEARNED

5.2.1 Summary of PRITECH and Other Relevant Findings

A. Strategic Planning

Findings about the strategic planning of ORT programs vary, but the general indication is that most countries presently have ORT program strategies that are likely to have only partial success in achieving widespread, effective use of ORT in children under five. The main reasons for this are that few countries have systematically analyzed their specific problem of mortality from diarrhea or determined what strategies are potentially available to reduce diarrhea-associated mortality and morbidity. As a rule, ORT has been added to existing Ministry of Health programs; ORS packets are usually distributed to the clinic- and hospital-based system and sometimes to the community-based systems. Unfortunately, the information base for strategy development is usually weak, and the strategic orientation is often limited and narrow. This "traditional" ORT strategy seldom recognizes the complexity of the rural environment and the extent to which public programs must compete with pervasive health beliefs and alternative sources of care.

In this traditional planning model, ORT program strategy is mostly limited to the public sector and is typically, MOH-dominant, facility-based, provider-centered, packet-oriented, and demand-dependent. As such, in most countries one finds that ORT strategic plans are identical to public-sector service delivery plans. Most of these plans are in early stages of implementation; they usually focus on training existing MOH staff and improving the supply of ORS packets, with perhaps a passive and weak health education approach in support of the services delivery activities. These plans are an important and necessary element of a broad ORT plan, but are almost never by themselves sufficient to achieve widespread, effective use of ORT.

Assessment teams have found few countries that have included explicit roles for the non-government delivery systems in their strategies. The non-governmental delivery systems - private voluntary organizations (PVOs), cooperatives, for-profit organizations, traditional practitioners, modern practitioners in private practice, hospitals, or pharmacies - usually function independently of government policies and strategies and may or may not be promoting the effective use of ORT. PVOs have not been encountered participating actively in the overall strategy in any country, even though they are major sources of care, especially in Africa.

In focusing their efforts on delivery systems and on the production, procurement, and distribution of ORS, most countries do not give adequate consideration to the potential of public education, professional education, and commercial sales. Most country programs are provider-centered or system-centered (seeking ways to improve their own organizations and the services they offer) rather than being problem-centered (starting with the problem of diarrheal disease and thinking broadly about the best ways of solving it). Public education in support of ORT programs most often relies on traditional interpersonal approaches, planned almost as an afterthought. They are usually weak and generally ineffective. One outstanding exception is Indonesia, where well-planned public education about ORS supports an aggressive commercial sales program.

PRITECH has also found a lack of appreciation of the importance of strategies for promoting ORT with the key professionals: doctors, nurses, and pharmacists. In addition, few countries have tried to guide the private, commercial sector to produce and sell ORS in the marketplace, although the product is easily distributed and sold if demand is created.

What is missing from the strategic plans of most countries is an adequate data base that delineates the target groups, as well as a conceptualization of the planning process. This conceptualization should begin with a knowledge of diarrheal epidemiology and what the target populations are now doing about the problem, as well as an awareness of existing sources of care for diarrheal disease and prevailing treatment beliefs. Only then can a country develop strategies to build on the existing situation, keeping in mind the strengths of the family itself. Inadequate conceptualization impedes the
development of appropriate roles and relationships among program components and reduces the effectiveness of the ORT program.

Beyond the strategic planning issue, ORT assessments must consider the relationship of the strategic plan to the composition of the budget. Even when the strategic plan of a government is favorable to ORT programs, the actual composition of the budget may paint a different picture of reality. Experience to date indicates that it is usually difficult to determine the budget implications of national health plans in general or ORT-related plans in particular, as governments seldom use a "cost-center" approach to facilitate determining all costs of the program. Usually the costs of ORS procurement are available, but little else. However, to whatever extent budgets can be specified, it is clear that funding is usually heavily biased toward urban and hospital-based services, severely limiting the ability of the rural health services to achieve widespread effective use of ORT.

B. Operational Planning

As with strategic planning, findings about the operational planning of ORT programs are varied. In general, however, it appears that most operational plans do not draw on a sufficient data base and are not detailed enough to easily meet the objectives for their component. In the public-sector services delivery component, the strategies are frequently too ambitious for the human and financial resources available. Often the strategies are built on a weak foundation of minimally-trained workers who are asked to do too many tasks and are not effectively supervised; on a weak management structure for diarrheal disease; and on low budgets - for diarrheal disease control in particular, but also for primary health care delivery in general - making it difficult to achieve adequate levels of coverage. The ORS supply system is often inadequate, as are the management information systems for monitoring and evaluation. These deficiencies are especially detrimental to the traditional MOH-dominant strategy.

As for non-government delivery systems, most have added ORT to the services they provide, but few have any detailed plans for an ORT program. Most PVOs are not particularly skilled in health planning, and many are just learning about ORT. They are usually strong in training, quality of care, and supervision, but are limited by low budgets. They seldom have adequate information systems for monitoring and evaluation. As for other non-governmental health systems, in most countries there are no operational plans to retrain existing individual service providers, whether modern or traditional practitioners, pharmacists, or shopkeepers.

Operational plans for public education are limited. Usually the health education department of the MOH is asked to provide some materials on diarrheal disease, or to offer one or two training sessions during in-service or pre-service training courses. In some campaigns, scripts for radio spots have been written and broadcast. However, these plans are rarely based on pre-program research about the target audiences and even more rarely field-tested for their appeal and their ability to communicate information accurately and successfully.

There are seldom operational plans for commercial sales of ORS in a national ORT program plan. This area is still very new for most MOH planners; where commercial sales are taking place, the national program often delegates action to private firms without establishing adequate coordinating and cooperating relationships. Most of the countries visited have better plans at the national level than at the regional, provincial, or district levels where planning activities are often confined to reading the national strategy without translating it into locally appropriate terms.

What is missing from the operational planning efforts of most countries visited is an adequate base of information on the diarrhea problem and on the current knowledge, attitudes, and practices of the population; plans for service delivery through non-MOH systems in the public and private sectors; and plans for commercial sales of ORS. What is weak and variable in most efforts is the public education plan; plans for pre-service and in-service training of workers, especially doctors, nurses, and pharmacists; and plans for adequate support of the ORT program through health information systems, financial planning, and control systems. ORS supplies are usually planned but are based on standard norms (e.g., 2 packets per episode) rather than on forecasts of effective demand. The plans seldom include an adequate organizational structure, as discussed in Chapter 7, "Organization and Management of ORT Programs and Service Delivery Systems."

From looking at recent successful ORT programs, a number of lessons have been learned about strategic and operational planning.

Lesson 1: Diarrheal disease is best treated at home by families, especially mothers.

Diarrhea is a common childhood disease which mothers and other family caretakers have been treating since the beginning of the human race. This home treatment is generally successful, as evidenced by the fact that only 1-2% of children die from any acute diarrheal disease episode. The most serious problem for the vast majority of children with diarrhea is the weight loss which may lead to malnutrition. Therapy for diarrhea must begin promptly with appropriate feeding and fluids at home. The cost of treating all diarrheas at health facilities would exceed the financial resources of most governments.

Lesson 2: Effective education of families, especially mothers, about diarrheal disease and ORT is one critical element of program success.

Families, literate or illiterate, can and should be taught about diarrheal disease, how to treat it when it first appears, how to recognize when it is becoming dangerous, how to use ORS packets and/or home-made solutions, and when to take their child to a health provider.

Lesson 3: All groups of health workers who offer care to targeted families should be trained to fill two roles: as health educators and as health providers.

Families use many sources of care for health problems in general and, specifically, for advice and treatment about childhood diarrhea. All health providers who play a major role in the care of children with diarrhea need training, both to teach families effective management of diarrheal episodes and to treat cases of diarrhea too severe to be cared for at home. These caregivers include public-sector providers; non-governmental organizational providers; individual practioners, both modern and traditional; and pharmacists, shopkeepers, etc., as appropriate.

Lesson 4: Families will purchase ORS packets if they understand their value, and the commercial sector is a very effective distribution system if incentives are adequate.

Families are already expending considerable amounts of money on health products and services, and reasonably priced ORS packets can be purchased by most income groups without undue effects on household budgets. The commercial sector will be an effective distribution mechanism for ORS if profit margins and total profits are reasonable. Under these conditions, the commercial sector will create demand for the product.

Lesson 5: Coverage, timeliness, and credibility are essential to achieving widespread use of ORT in unsupervised settings.

Coverage is the ability to reach many people quickly, and it is best achieved through the media. In most countries, this means radio. However, to ensure appropriate and consistent use over time, face-to-face, repeated contact with mothers and peripheral health workers will be needed.

Timeliness is the availability of specific mixing and administration reminders at the moment they are needed. This can be accomplished partly by print and graphic material - specifically a packet label and a one-page instruction sheet. In addition, individual instruction and demonstration at the time of an episode of diarrhea are among the most potent training techniques available.

Credibility, the acceptance of ORT by patients, is best achieved through the full support and use of ORT by recognized health professionals in the country - physicians, nurses, and pharmacists. Programs like the BRACS program in Bangladesh demonstrate how a simple reward system tying the mother's performance to the health worker's pay can produce dramatic increases in health worker effectiveness and, consequently, in overall program effectiveness. While BRACS had the advantage of a large population reservoir and private-sector independence, these principles can also be applied to public-sector programs.

Lesson 6: Program plans should be inclusive; a piecemeal plan is less likely to succeed than one that takes into account all the elements of the program.

A comprehensive plan must include:

- o adequate knowledge about the diarrheal disease problem, including its epidemiology and the health practices of the target population for diarrhea;
- o clear objectives and an overall strategy aimed at achieving widespread, effective use of ORT in children under age five on a national basis;
- o specification of all the resources needed to achieve the objectives;
- o a plan to achieve physician support;
- o a carefully planned public education program;
- o a training program for all major sources of care;
- o either provision for adequate supply and distribution systems for ORS, or an emphasis on home-prepared solutions and provisions to make that approach successful;
- o adequate organizational structure and staffing to manage the program;
- o adequate information systems to monitor progress and provide feedback to field staff.

Lesson 7: Programs should be based on field research.

An effective program must be based on thorough knowledge of existing audience practices and beliefs. The research to acquire this knowledge should be multidisciplinary, bringing together physicians with anthropologists, behavioral scientists, instructional designers, and communications specialists. Research techniques should include qualitative as well as quantitative approaches.

Some of the critical questions to be answered through field research are:

- o How will mothers mix the solution? What containers are available?
- o Where can mothers obtain packets or ORT ingredients if they do not have them or cannot get to a health center?

- o Whose advice do mothers accept about diarrhea?

- o What do mothers want a remedy for - the loose stool, appetite loss, weakness? What do they worry about when a child has diarrhea?

- o What are mothers doing now - purging, giving teas, withholding food, etc.? Why do they feel these are appropriate methods?

- o What type of print material would be most valued and used? Pictures, words, or both?

- o Why do mothers listen to the radio? Whom do they trust as radio announcers?

- o Would there be a substantial enhancement of image and desirability if ORS were a medicine rather than a food product?

Lesson 8: Plans should focus on the audience, not the providers.

The program research, delivery system, and message strategy must be driven by a fundamental concern for the attitudes, beliefs, resources, constraints, and practices of the family, especially the mother. Program designers must not focus primarily on what physicians believe mothers should know about ORT, but rather on information which mothers will understand, accept, and apply.

This type of analysis requires a thorough understanding of audience reward systems. The primary objectives must be to identify rewards which can be associated with correct performance of the key practices and to ensure that the constraints to performance are minimized. Rewards need not be monetary; indeed, in most cases they will not be. Appropriate rewards identified in several existing programs have included increasing the women's status as a "good mother"; a husband's praise; simple gifts like bars of soap or colorful printed flyers; and the inherent reward of dramatic improvement in a child's activity level and appetite which results from proper use of ORT.

Broad audience groups should be segmented into smaller, more homogeneous groups built around critical characteristics like traditional practices, involvement in child care, and contact with health systems. These variables can then be used to fashion special message strategies directed at each group.

The health delivery systems should be organized to support the public education effort by providing interpersonal health education and backup services when families cannot safely take care of the diarrheal episode themselves.

Lesson 9: Plans should be flexible and allow for recurrent revision to reflect information from field successes and failures.

Monitoring the campaign is essential. Regular visits to villages, watching how ORT is being used or misused, systematic interviews with health workers and mothers, will expose weaknesses otherwise impossible to predict. Once discovered, these mistakes must be corrected, not argued away. Mistakes are normal - indeed inevitable - and they can be corrected if they are admitted.

Lesson 10: Plans should be simple.

Program planners must avoid the temptation to complicate matters. Mothers will learn and practice ORT more effectively if the advice they receive is simple. The most successful programs use only a few print materials, do not ask health workers to do much more than they are already doing, and repeat a few good messages over and over rather than making dozens of new ones.

5.2.2 Summary of Constraints

At present, there are a number of common constraints that adversely affect the strategic and operational planning of ORT programs:

A. The focus on child survival and ORT for reduction of diarrhea-associated mortality is relatively new around the world. Public health professionals are still learning about ORT programming, and health providers - particularly practicing physicians - are still learning about the benefits of ORT for diarrheal disease.

B. The data base for planning ORT programs is usually inadequate. Instead of using actual data, planners are forced to rely on estimates of the incidence of diarrhea, diarrhea-associated mortality, and relevant knowledge, attitudes, and practices of the population.

C. Many planners lack technical knowledge of the nutritional aspects of diarrheal disease and do not include nutritional considerations in their strategic or operational planning.

D. The orientation of most planners is exclusively toward a public-sector approach to ORT. Programs designed with this approach generally fail to take into account three critical factors: the current diarrheal disease situation, including epidemiology; current knowledge, attitudes, and practices of both the target population and major sources of care; and the strengths of the family itself.

E. Most planners neglect important non-governmental sources of care in their planning.

F. Even when they have favorable attitudes toward use of the private and commercial sectors as part of an overall ORT program, most planners lack knowledge, skills, and experience in planning public education and commercial sales programs.

G. Many plans lack a strong promotional/educational effort aimed at gaining support of the physician community and other professional health care providers..

H. Few planners take into account the importance of negative local-level experience with public-sector delivery systems which have failed in the continuity or quality of services attempted. The residue of cynicism and reluctance must be countered by plans which take such history into account and contemplate the long-term implications of country plans, e.g., recurrent costs, consistent and continuing supply, staff turnover, etc.

I. Few countries have included the development of an adequate health information system in their plans. This lack makes it impossible to monitor progress accurately.

J. Most countries base their estimates of ORS packet needs on some normative model, rather than on forecasts of effective demand.

5.2.3 Summary of Options

A. Options for Strategic Planning

The choice of appropriate strategic planning options is crucial to achieving the goals and objectives of an ORT program. The traditional strategy discussed previously has been characterized as dominated by the public sector and MOH; facility-based; provider- and system-centered; packet-oriented; and demand-dependent. The commercial strategy is in place in many countries where the commercial sector is selling ORS with limited contact with the government. This strategy may be characterized as private-sector dominant; pharmacy- and/or retail store-based; consumer-oriented; packet-oriented; and demand-creating.

PRITECH generally advocates a mixed multi-system strategy which may be characterized as MOH-coordinated and family-centered. It emphasizes public education, relying on mass media, health providers, and non-health providers (community workers, teachers, etc.) who work in targeted communities. It is inclusive of all major sources of care (public- and private-sector health service delivery systems, including individual practitioners); encompasses home-made solutions, packets, and appropriate feeding practices; and is demand-creating. This strategy has consistently yielded the best results in the most successful ORT programs to date and is therefore advocated by PRITECH.

B. Options for Operational Planning

The choice of operational planning options within specific ORT program components is discussed in each topical chapter.

5.3 PROBABLE PRINCIPAL ISSUES

5.3.1 Strategic Planning Issues

A. Determining the Magnitude, Distribution, and Nature of the Diarrheal Disease Problem

The first aspect of this issue in assessing national ORT program strategies is the determination of the magnitude of the problem and its meaning for strategy development. The worldwide incidence of diarrhea is about 1 billion episodes per year; the number of children affected is about 300 million per year; the number of deaths is about 5 million per year; and the average cost per case treated by a health delivery system is $2 or more, including staff time, packet treatment, and some pro-rated capital costs. Analysis of these figures reveals that to treat all cases at a health unit would cost about $1 billion per year, a figure roughly equal to the total government health

expenditures for the 67 low- and middle-income countries of the world. Costs alone make it clear that, in most countries, the magnitude of the diarrheal disease problem exceeds the capability of governments to provide free services and ORS packets to treat all cases.

Given these facts, it is essential to garner the most accurate available information about diarrheal disease and ORT in the country being assessed. Important indicators include incidence of diarrhea and incidence of severedehydrating diarrhea, especially in children under five; infant and child mortality and diarrhea-associated mortality rates; case-fatality rates; diarrhea etiology rates; access to ORS packets (usually defined as one-hour travel time to packets); and use of ORT (best measured by "ever used" and "used with last episode").* From these data, the magnitude of the problem in the country can be estimated, and from this estimate rough predictions of potential demand and costs for ORS packets can be made.

A second and related aspect of this issue is the distribution of diarrheal disease in the country. What is the distribution of diarrhea by age, season, location (urban-rural, region or district, riverine-mountainous, etc.), socio-economic group, and other distinguishing characteristics? What are the proportions of acute and chronic diarrhea? If infant and/or child mortality in general or diarrhea-associated mortality in particular is low, the strategies for ORT may need to be selectively focused on the most vulnerable subsets of the population. If the diarrheal disease is seasonal, limited in location, or restricted to certain socio-economic groups, the strategies may be very different than if it is widespread and diffuse. If the diarrhea is mostly chronic, ORS packets may have limited effect. The distribution of diarrheal disease in the country needs to be understood in order to design ORT program strategies that will reach carefully selected target audiences.

The prevalence within families of knowledge about the symptoms and early treatment of diarrhea is another important aspect of this issue to be considered. The nature of diarrheal disease in children is that only about 1-2 episodes out of 100 result directly in the death of the afflicted child. Most cases are mild and self-limiting, and most parents are used to diarrhea in their children. Since so many acute diarrheal episodes do not result in dehydration, ORS packets are not always useful. It is more important for parents to know what to do when diarrhea begins and to recognize when it is becoming dangerous to their child.

B. Nutritional Implications of Diarrhea

As noted earlier, diarrhea can be not only a direct cause of death but also an important contributing cause to life-threatening malnutrition. Of the 98-99% of children who survive a diarrheal episode, many are adversely affected nutritionally; with repeated bouts, they may become so undernourished that they eventually succumb to diarrhea itself or to infectious disease. It is clear that planning strategies must take into

* Chapters 1 & 2 of the WHO Manual for the Planning and Evaluation of National Diarrheal Disease Control Programmes (WHO/CDD/SER/81.5 Rev. 1, 1984) are extremely helpful in delineating the data needs for diarrheal program planning.

account the prevalence and severity of malnutrition among children in any given population. National strategies for diarrheal disease programs should recognize that the prevention of malnutrition during and after a diarrheal disease episode is as crucial for child survival as is rehydration. Oral therapy for diarrhea is more than ORS alone; it implies frequent feeding during the acute illness and extra food in the immediate post-diarrheal phase: "ORT = ORS + appropriate feeding practices." ORT programs must deal effectively with the nutritional aspects of diarrhea and educate families carefully about the nutritional consequences for children who survive one or more episodes.

C. Determining the Current Health-Seeking Behaviors of the Population

The actual sources of health care for the majority of the population in a given country are still another critical issue to be considered in developing the strategic orientation of a national ORT program. It is clear that in many developing countries, families use a variety of sources of care for their health problems. In most parts of Asia, over 70% turn to non-government sources of care - usually traditional medical practioners, traditional birth attendants, private doctors and paramedicals, pharmacists, private voiuntary organizations, and cooperatives. This pattern is common as well in the Near East, in Latin America, and in Africa, although in Africa pharmacists and doctors in private practice are less common sources of care than PVOs. Data on the health-seeking behavior of families for children with diarrhea is seldom readily available, but studies suggest that families are more likely to treat diarrhea at home and with traditional remedies than they are less common illnesses.

It is also widely observed that families spend much more themselves on health care than governments spend. Families, even in remote rural areas, purchase services, drugs, and other medical products from neighbors, traditional practioners, pharmacists, shopkeepers, doctors, and other available advice-givers. Since families are already using a variety of sources of care and spending their own money on services and products, and since it is unlikely that public-sector health budgets will rise substantially in the next few years, a major shift from non-government to public-sector sources of care is unlikely. These facts must be taken into consideration in the planning of national ORT programs.

D. Determining the Current and Potential Supply of ORS Through Various Channels

Chapter 11, "ORS Supply Management," details the factors to consider in determining the current and potential supply of ORS through various channels. Only the most important general issues are discussed here. The major issues in assessing ORS supply strategies are how well the current approach to supply reflects the magnitude and nature of the diarrheal disease problem, the health-seeking behaviors of the population, and current patterns of health expenditures.

In some countries, for example, the data may suggest that in the medium term, once demand has risen, free distribution of ORS will exceed the budgetary capacity of governments unless donors plan to supply ORS free at subsidized prices for an extended period of time. Or the data may suggest that

strategies based on public-sector distribution alone will not reach the vast majority of families which use a variety of sources of care. A strategy based on self-care by families may suggest limiting the supply levels of ORS packets, since ORS will not, in most cases, be the first therapy for childhood diarrhea if parents are not educated about diarrheal disease and its dangers. The data may further suggest that parents will purchase ORS packets readily, probably at a variety of price levels, if they understand and recognize the benefits of ORS. These hypothetical examples demonstrate the importance of fully exploring the many factors that can affect supply.Perhaps most important, it must once again be remembered that the supply of ORS packets is not sufficient for child survival - ORS alone does not equal ORT.

E. The Mix of Home Solutions and ORS Packets

Due to the magnitude and nature of diarrheal disease, especially its frequency, its usual mild course, and its adverse effect on nutrition, home treatment with fluids and appropriate feeding is always an important part of diarrheal disease treatment. It has repeatedly been demonstrated that families can learn to make a home-based ORT preparation that can be used to prevent dehydration or to treat dehydration if no packets of ORS are available. It is also clear that families will buy packets if they view them as important and if the packets are accessible and reasonably priced. Thus, the strategy is likely to vary by country. For purposes of safety, it is perhaps best that families be taught to give home preparations that are familiar to them (soups, rice water, teas, coconut water, etc.) when the child first gets diarrhea. If the diarrhea continues and the child produces a number of watery stools, ORS packets become the therapy of choice. But if ORS packets cannot be made readily available 24 hours a day, 7 days a week, and 365 days a year, consideration must be given to teaching the proper mixing of sugar, salt, and water to virtually all the people.

In other words, to reduce reliance on use of home-based ORT for treatment of dehydration, ORS packets need to be readily available all the time. Since most public-sector health systems are unable to give logistics the priority they deserve in health system operations, multiple delivery systems for ORS packets must be strongly considered. These will probably include commercial sales, sometimes requiring subsidized prices, at pharmacies and perhaps at food shops. In any event, keeping in mind that "ORT = ORS + appropriate feeding practices," home solutions are likely to be part of any strategic approach.

F. Determining the Potential for Public Education and Self-Care

The background paper, "Communications in Support of ORT Programs," describes in detail the factors to consider in assessing public education programs for ORT; only the important overall issues are discussed here. These are:

- o the content of a public education program;
- o the target groups;
- o the strategies and channels used;

- o the necessity for research before mass education activities begin;
- o the proportion of the budget allocated.

The content of public education messages must convey correct information to the public about what to do when diarrhea first occurs, how to recognize when it is becoming dangerous, how to treat it in order to prevent dehydration, how to treat dehydration if it occurs, and when to go to the health system for help. In treating diarrhea, families need to know how to use home-made solutions, how to mix ORS packets with water, and when to discard the solution. The content must be consistent, providing identical instructions and information in every message. Because diarrhea is a disease which should first be treated at home, on both financial and nutritional grounds, it is apparent that families, especially mothers, should be the target of public education programs. Mothers are the key to treatment because they are the main care-givers, the family members most likely to spend adequate time with a sick child, and the most receptive to messages about child-rearing.

In many countries, the majority of families do not use use the MOH systems as their usual sources of care. And even for those who do rely on the public sector for care, the MOH delivery systems cannot provide routine, regular health education or treatment. Therefore, strategies must be developed and channels identified to reach the family, especially the village mother, with information about diarrheal disease and ORT. These often include radio, television, and print media, supported by interpersonal health education delivered through the public and private health service system and at commercial outlets.

In addition to conveying accurate information, the mass educational effort must appeal to the target audience by responding to their thinking and motivations. Thus, pre-program community-based research is necessary to develop messages that will convince families. Investigation of audience knowledge, attitudes, and practices and systematic pretesting of materials help assure that messages are relevant and culturally appropriate.

Budgetary considerations obviously underlie decisions about all these critical issues, and may inject a note of reality into the most elegant educational plans. The proportion of the health budget - and, more narrowly, of the CDD program budget - to be allocated to mass education may be an immutable factor in choosing among educational alternatives. In some cases, however, a persuasive, carefully-costed education plan may be able to increase the allocation. In either case, it is essential to estimate as accurately as possible the costs of every alternative. ORT program assessments should ascertain what public education is being planned, what communication channels are proposed, and to what extent the message and the channels are appropriately geared to the target audience.

G. Determining the Acceptability of ORT to the Medical Profession

The background paper, "Education of the Medical, Nursing, and Pharmacy Professions for ORT Programs," describes in detail the factors to consider in assessing educational programs for physicians, nurses, and pharmacists. The important overall issue to be considered here is that it is nearly impossible

to achieve widespread, effective use of ORT without the support of the medical profession. Therefore, in studying ORT program strategies, it is important to determine the extent to which physicians are truly supportive of this approach.

The magnitude of the problem and nature of diarrheal disease means that intravenous therapy will never be adequate; in addition to having no impact on post-diarrhea malnutrition, it is too costly. Given the health-seeking behavior of the population, there will continue to be a variety of non-physician sources of care, and the population will continue to purchase products such as ORS where available. However, for ORT to be perceived as first-class treatment, it needs to be used as the first therapy at hospitals, both in the outpatient department and on the wards. Because physicians control these areas, ORT will never be the treatment of choice unless the medical profession is convinced that it is acceptable therapy for acute diarrhea. To determine the acceptability of ORT to the medical profession, therefore, one must investigate the extent to which ORT is given in hospital out-patient clinics and in-patient wards, from the most peripheral rural hospital to the major teaching institution of the country. This will provide the clearest evidence for ORT program assessments of whether and how programs are dealing with the issue of physician acceptance.

Subsequent plans must include activities to influence the opinion of physicians when it is found to be neutral or negative. These plans might include interaction with medical schools, support of research on ORT, collaboration with professional societies, and in-service training for MOH physicians.

H. Determining the Potential for Commercial Sales

Chapter 12, "Marketing and Sale of ORS," describes in detail the factors to consider in assessing the potential for commercial sales programs for ORS packets. The overall issue to be considered here is that the magnitude and nature of diarrheal disease, the current health-seeking behaviors of the population, the current expenditures by families for health services and products, and limitations in public-sector budgets and capability all suggest that commercial sales of ORS might be an important component of an effective ORT program. Since it is important that ORS be widely available, multiple channels of supply are favored; it should be recognized that the profit incentive for commercial distribution may lead to more readily available ORS in rural isolated markets than will public-sector distribution.

5.3.2 Operational Planning Issues

The operational planning issues for the ORT program components are discussed in each topical chapter.

THE PLANNING OF ORT PROGRAMS

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 5.

1. What are the magnitude, distribution, and nature of the diarrheal disease problem in the country?

    - o Under-5 mortality?
    - o Under-5 diarrhea mortality?
    - o Diarrhea ranking as a cause of mortality by age or group?
    - o Case-fatality rate by institutional level, hospital, health center, etc.?
    - o Case-fatality rate by urban, rural or other geographic differentials.
    - o Diarrhea indicators from deprived groups, urban slums, etc.?
    - o Seasonality of diarrheal cases and deaths (monthly rate for last 3-5 years)?
    - o Nutritional status of population groups?
    - o Diarrhea in association with malnutrition?
    - o Environmental data; water, latrines, sanitation practices?

2. What are the current health-seeking behaviors of the population, especially regarding diarrheal disease in children under age five years and the use of ORT? What are the major sources of care for various population groups, especially for children in general and for people of all ages with diarrhea?

3. What is the present practice in management of diarrhea at each level of the health system - hospitals, health centers, dispensaries, homes, private clinics - and among midwives, pharmacists, traditional healers?

4. Who are the traditional healers? What preparations do they use? What is their attitude towards fluids during diarrhea? Towards eating during diarrhea? What do they believe causes diarrhea? Will they accept ORS as part of their traditional approach?

5. How long has there been a national ORT program? What has been the evolution of the ORT program over the last five years?

6. What are the current goals and overall objectives of the ORT program?

7. What is the overall strategy of the ORT program? Is it oriented to the providers and the health system, the commercial systems, to families and to mothers, or to mixes of these approaches?

8. What is the current strategy regarding the use of "home solutions" and ORS packets?

9. What are the current sources of supply of ORS? What are the current distribution channels?

10. How does the strategy deal with the adverse nutritional consequences of diarrhea?

11. What is the current strategy for communication and public education?

12. What roles do the MOH service delivery units play (including community-based, clinic-based, and hospital-based units)?

13. What roles do non-government health delivery systems play in the program (PVOs, coops, for-profit hospitals, etc.)? What roles do individual practitioners play in the program (modern physicians and pharmacists, traditional practioners)?

14. What is the acceptability of ORT to the medical profession?

15. What is the potential for commercial sales of ORS?

16. What methods, if any, of demand creation are used for public education or sales of ORS through public, non-profit, or commercial channels?

17. What are the training strategies for all program components?

18. What data base and information systems are used in the strategic planning process?

19. What are the financial resources for the ORT program? How are they related to the objectives and strategy? Are they sufficient given the strategic approach?

CHAPTER 6: FINANCING ORT PROGRAMS

Catherine Overholt
Donald Shepard
Mead Over

6.1 INTRODUCTION

The purpose of the Finance Guidelines is to help assessment team members identify an appropriate set of economic and financial questions, together with approaches to answering them, that will aid the team in making strategic choices and recommendations for ORT programs and activities. These economic and financial issues do not stand in isolation, but rather should be seen as part of the analysis in several other components of the overall assessment, namely communications (Chapter 9), supply and distribution of ORS (Chapters 10 through 12), training and education (Chapters 14 and 15), and management information systems (Chapter 13). This chapter, therefore, may stand in isolation, but it is more usefully seen as a resource for individual team members looking at the financing dimensions of their own particular area(s) of expertise.

Analysts for each of these guidelines modules will need to identify the incremental costs associated with the strategic options that they consider and compare them with expected incremental effects. The guidelines, thus, help to determine resource requirements for different configurations of the program. The resulting data set will provide additional relevant and important parameters that will assist analysts in selecting among competing ORT options or alternatives.

6.2 EXPERIENCE TO DATE/LESSONS LEARNED

6.2.1 Summary of PRITECH And Other Relevant Findings

Experience in financial analysis of ORT has been extremely limited. Assessment teams have been constrained by: an uncertainty regarding the orientation and content of the analysis; the composition of teams, which lack either the skills or orientation for application of financial analysis; inadequacies and/or unavailability of required data; and time limitations. These factors have prohibited completion of even the most rudimentary analyses for country programming exercises.

We expect that the assessment of the costs associated with ORT will continue to be constrained in most developing countries by the lack of readily available data in an appropriate form. Projecting costs and estimating probable effects of alternative program methods is especially difficult when data are lacking on existing efforts. Financial analyses for ORT will also be difficult when government health services are in the early stages of program development or when budgetary commitment to national programs for PHC is small or nonexistent. Even when adequate data are available, application of the methods suggested here in their fullest detail may well exceed the time limitations of a team and/or their specific skills.

6.2.2 Summary of Constraints

Probably the most critical shortcoming for financial analyses of ORT activities and programs is the lack of data needed for cost effectiveness and other cost and budget studies. This situation will be ameliorated over time in those countries which have launched national programs, but in the early stages of assessment and programming, it is bound to be a critical problem. Creative solutions will depend heavily on the results of analyses performed in countries where lack of data have not been so severely constrainted.

Analysts in most countries will be fortunate if they find enough data to fill out completely the tables included in these guidelines. They must be mindful of time limitations: the average study team visit will last three weeks, with at least the last week probably devoted to recommendations for new or expanded interventions. This effectively rules out any significant original research. Major gaps in data which translate into major gaps in comprehension of important financial issues need to be identified for further analytical work.

Acceptable estimates of future costs and effects when knowledge of current costs and effects is weak can sometimes be made on the basis of subjective data gathered in interviews. This is often a reasonably good substitute for hard data when it is combined with good qualitative sense and experienced judgment. At the same time, financial analysts should try to encourage improved data collection wherever possible.

It should also be noted that, in the age of the microcomputer, data of very poor quality and subjective estimates can still be utilized under a great variety of assumptions, and a range of results can be rapidly developed. Analysts are encouraged to bring a portable computer which contains a spreadsheet program.

6.2.3 Summary of Options

The concept of the strategic option is not really appropriate here. As indicated at the outset, the financial dimension is part of the strategic options developed in the other technical areas. Thus, the Finance Guidelines are most appropriately implemented in conjunction with/or as part of the assessments in Chapters 9 through 15.

6.3 PROBABLE PRINCIPAL ISSUES

On the basis of experienced judgments from the experts in the field, the issues of primary concern for financing ORT are the following: 1) estimation of costs; 2) estimation of effects; 3) consideration of incentives; and 4) affordability and sources of financing. Each of these topics needs to be included as part of the assessments to be undertaken in the topical areas covered in Chapters 9 through 15. The general terms of reference for these issues to be addressed are elaborated on below. The entire discussion is reflected in the related Consultant Checklist provided at the end of this chapter.

6.3.1 Estimation of Costs*

A. Concept of Incremental Costs

One important purpose of these guidelines is to provide guidance to assessment team members on how to estimate the costs of the ORT programs and activities which they will recommend and what effect these costs will have on the budgets of the responsible financing entity(ies). Health lags far behind other sectors in cost modeling. Adequate methods to simplify the calculations and make the work manageable do not exist. Developing cost estimates, therefore, will need to rely on good detail work. Cost estimates can either be based on cost data drawn from existing ORT/EPI programs or similar PHC activities; or estimates can be built from the "ground up," once agreed on approaches have been selected. Gauging the costs of alternative ORT programs/activities will help to lay out the affordability issue, discussed below in Section 6.3.4.

The approach suggested here is to consider the incremental or additional costs which will be incurred by adding ORT programs/activities to ongoing health programs and existing institutions, or by expanding existing ORT programs/activities. This approach will identify the additional resource needs for new or expanded programs and permit rough order-of-magnitude assessments for recommended alternatives. Comparing the incremental costs with anticipated effects can identify obviously unsuitable alternatives at an early stage.

Refinements of cost estimates eventually will need to take into account the opportunity costs of the human and non-human resources which will be allocated away from current uses and towards new or expanded programs. However, these refinements can be reserved for a later stage of project design and feasibility assessment, without doing serious damage to the outcome of the incremental approach proposed here.

B. Functional Cost Categories and Cost Timeframes

Figure 1 identifies functional categories for the costs associated with ORT programs/activities. The columns for capital and recurrent costs refer to the timeframe in which costs occur.

The total incremental costs for selected ORT programs/activities are obtained by computing and combining the cost components identified in Figure 1. Total incremental costs would also include annualized capital costs.

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* This section substantially adopts and summarizes from the following: 1) Donald S. Shepard, 1984, "Guidelines for Projecting Costs and Developing Budgets for Selected Primary Health Care Activities," Institute for Health Research, Harvard School of Public Health, prepared for PRITECH; and 2) Mead Over, 1985, "Allocating Joint Costs in the Health Sector," prepared for PRITECH.

FIGURE 1
COSTS OF ORT PROGRAMS/ACTIVITIES

Categories of Costs	Capital	Recurrent
Personnel		
Supplies and media		
Transportation		
Training		
Management and supervision		
General facilities		

Capital costs are defined here as the costs of plant, equipment, and training programs which are productive for more than one year. They are incurred in the construction of a building or acquisition of an item and in the form of replacement costs after the initial item wears out. When personnel are lost through attrition and replacements must be trained, this, too, is a capital cost analogous to the replacement of other capital items. An annual replacement allowance should be incorporated into capital costs.

For completeness, capital costs should also be estimated and included. However, because capital costs in many developing countries are contributed by foreign donors, they are less often a constraint to affordability than the recurrent costs considered below. Given time and data constraints, estimation of capital costs should not be considered a priority. The procedure for estimation of capital costs is detailed in Annex 2.

Recurrent costs are defined here as the costs incurred on an ongoing basis each year for the operation of ORT programs/activities.

For the sake of simplicity, these guidelines address only the estimation of the incremental recurrent costs which would be implied by any of the alternative ORT programs/activities under consideration in the other guidelines.

Personnel

Salaries are paid to technical personnel which include nurses, doctors, health assistants, media experts, trainers, warehouse managers, and other supervisory personnel, and to support staff which include clerical staff, storekeepers, cooks, drivers, sweepers, etc. New ORT activities may be implemented largely with existing personnel, so that for identifying incremental costs, only personnel who would be hired or retained specifically for the selected ORT activities should be counted. Estimation of salary costs are detailed in Figure 2 (see Annex 1).

Supplies and Media

Supplies and media include the materials for medical, office, communications, production, warehouse or other activities related to ORT programming. For example, medically-related supplies for ORT would include ORS packets, spoons, IV fluids, needles and tubing, packaging material, and other drugs. Production-related supplies would include ORS ingredient mix, and foil and other packaging materials. Incremental costs of supplies are obtained by multiplying the unit cost of each supply item by the quantity that will be needed. Estimates of these quantities may be based on records of past utilization. If full annual data are not available, sample time periods can be used. Missing data should be estimated as the average of "similar" available reports. Similar reports should either be ones for the same facility in a different reporting period or for a different but similar facility in the same period. An example of the estimation of supply and media costs is presented in Figure 3 (see Annex 1).

Transportation

Costs of transportation are primarily for personnel and supplies. Incremental costs will include fuel for vehicles, travel allowances for personnel, supervisors, and managers associated with the additional activities. The cost of vehicle maintenance should be allocated according to the anticipated fraction of its use in the new or expanded ORT activity. In general, operating costs of vehicles can be estimated as 20 to 50 percent of acquisition costs. The lower figure applies to densely-settled areas with good roads and short distances, and to systems where there is effective vehicle maintenance; the higher figures refer to more adverse conditions. Figure 4 (see Annex 1) details estimation of transportation costs.

Training

Again for the sake of simplicity, only the cost of the required additional ongoing training and health education of personnel within the country need be counted as incremental cost. Training of higher-level personnel, such as national managers, should be described qualitatively, but determining its cost is too difficult for quantitative estimates to be useful. The required ongoing training should take into account the number of years that the worker is likely to remain in the occupation for which he/she was trained. Experience in other new health programs, such as family planning or vaccinations, can provide estimates for the turnover of personnel. Training of community volunteers and refresher training related to ORT activities should also be included as ongoing costs. Figure 5 details training cost estimates (see Annex 1).

Management and Supervision

These functions are often provided by personnel other than those directly providing ORT supplies and services. If an organization does nothing but provide ORT supplies and services, then all the management and supervision expenses of that organization relate to that activity and incremental costs for expanded activities can be computed straightforwardly. Usually, however, the selected ORT activity is only one of an organization's activities. In

that case, the incremental costs of management and supervision (primarily the salaries of administrative, supervisory, and support personnel, as well as general support costs of health facilities) must be determined by allocation. The following steps are carried out:

1. Determine the total annual costs of administration, manag ment, and supervision for the facility or community organization which conducts a PHC program. Administrative costs include all costs that do not belong to another specific program and which serve all programs in the facility.

2. Determine an allocation formula for administrative costs. The most reasonable allocation appears to be based on the fraction of salary costs:

$$\text{ORT adminstrative fraction} = \frac{\text{salary costs of selected PHC activities}}{\text{salary costs of all specific programs}}$$

3. Apply the allocation formula to total administration costs. Thus,

$$\text{Management and supervision costs allocated to ORT} = \text{Total annual costs of management and supervision} \times \text{ORT administrative fraction}$$

Figure 6 (see Annex 1) provides details on these estimations.

Foreign Exchange Costs

In many developing countries, foreign exchange is more scarce for a government than local currency. For this reason, it is important to estimate this component in new and expanded programs and ORT activities. It may be important to identify those alternatives which minimize incremental foreign exchange requirements. For most ORT activities, the greatest demands for foreign exchange are for supplies and transportation. To estimate foreign exchange costs of supplies, we first identify which supplies are imported. Their full C.I.F. (cost/insurance/freight) to the port (or airport) of entry must be paid in foreign exchange. In addition, some ORT supplies may be locally made out of imported ingredients. In that case, the cost of imported ingredients, packaging and probably packaging equipment, and spare parts must all be imported. By talking with the financial director of the local institution making ORS (or other supplies), their import content can be estimated as a percentage of total cost. The import content of transportation costs are estimated by identifying which items are imported (generally, fuel, lubricants, and spare parts). Their cost as a proportion of total recurrent cost approximates the foreign exchange portion.

Generally, other categories of recurrent cost (salaries, ongoing education, management, and supervision) use substantial amounts of foreign exchange only if expatriate technical assistance will be used on an ongoing basis. Where this is so, these foreign exchange components must be identified and counted. Otherwise, the foreign exchange component of these categories can be ignored. Figure 7 (see Annex 1) details foreign exchange calculations.

6.3.2 Estimation of Effects

The costs of recommended programs and activities must be compared to an assessment of the probable expected effects of these programs and activities. The approach suggested here parallels that used for estimating costs. The analysts will need to make reasoned judgments regarding the incremental effects that will be produced by implementing the alternative programs or activities that are considered. While reductions in diarrheal mortality and the overall prevalence and incidence of diarrhea are the desirable outcomes, they may be difficult, if not impossible, to estimate during the assessment stage. Two approaches are suggested here for estimating expected incremental effects.

The first approach would be to use available estimates from results reported in the literature for similar activities. Pertinent literature on what has been tried in other countries can provide guidance on the relative order of magnitude of expected effects. The second would be to make rough estimates of expected incremental changes in process measures. Illustrative process measures include the following:

Production and distribution (see Chapters 10 through 12)
- # packets
- # individuals treated
- # outlets covering what % of the population
- % time outlets have supplies in stock

Communications (see Chapter 9)
- # of different messages
- % population with access to medium
- % population with knowledge of message
- % population who demonstrate changed behavior

Training and education (see Chapters 14 through 15)
- # individuals trained/retrained
- % population covered.

Process measures will be unique to each of the particular guidelines assessments. The analyst will need to identify the appropriate process measures that will be used for estimating the incremental effects of programs and activities.

Comparison of incremental costs with incremental expected effects for each of the options or alternatives that the analyst considers will permit a first-order ranking of the magnitude of costs and effects. While it should be duly noted that this exercise does not constitute a cost-effectiveness analysis, this information contributes highly relevant information to the decision-making process for establishing recommendations.

6.3.3 Incentives

Economic incentives are a crucial element in the assessment, because they define how different entities involved with ORT will behave during implementation. The basic questions include: who will be affected? how? by what kinds of policy measures? The goal is to identify a set of incentives which will be most conducive to the desired program behaviors among suppliers, distributors, users, and others, which will maximize the use of ORT.

Analysis of incentives can be carried out in four steps:

1. Specify ORT System Entities

There are four general categories of entities. First are the external suppliers of the ORS product or raw materials. Second are the internal suppliers, which are either local producers or importers. Third are the distributors of the product; these can be subdivided into public-sector health and (potentially) non-health entities, private commercial entities (including pharmacies, general stores, and medical professionals, traditional or modern), and nonprofit PVOs. Fourth are the end-users; these can be segmented into rural and urban and by income level.

2. Identify Policy Measures Affecting Entities

The financial analyst need not be interested in the total universe of government policies and regulations which affect each entity involved, but only those which have economic impact on ORT-related activities. Because different measures affect different entities differently, the analyst must match measures with entities. As a means of organizing the analysis, policies can generally be categorized into eight areas: 1) trade policies (e.g., import restrictions, tariffs, exchange rates, and foreign exchange availability); 2) monetary policies (e.g., credit availability, interest rates, inflation); 3) fiscal policies (e.g., tax holidays and rates, expenditures); 4) investment policies (e.g., industry priorities, tax credits); 5) salary policies (e.g., public employee performance bonuses, travel and per diem allowances, social security coverage); 6) distribution policies (e.g., restricted channels for selected products, product quality standards); 7) pricing policies (e.g., price or margin controls); and 8) subsidy policies (e.g., to producers, distributors, or consumers). The implementation of ORT programs or activities take place in an environment which is already filled with a multitude of policy measures created for a multiplicity of reasons. Identifying the relevance of these to the key institutions is an essential second step.

3. Assess Impact Of Incentives

These existing measures can have a positive, negative, or neutral effect on the entities' behavior regarding the ORT effort. For example, high tariffs on finished ORT might make its price too high for consumers and therefore create a disincentive for importers. Similarly, if the duties on inputs are too high, a local manufacturer might find itself in a similar bind. Foreign exchange restrictions which failed to put ORS on the priority list could

eliminate all local incentives. On the other hand, monetary or fiscal policies which extend low-interest loans and authorized tax credits for local production of priority health supplies might create a strong positive incentive. Price controls might squeeze the profit margins of ORS for pharmacies and create incentives to stock and sell only high-priced items. For public health entities, the failure to provide additional budgetary allocations to cover incremental costs can create a disincentive to undertake the program in a serious manner.

At the end of this line of producers, suppliers, and distributors, are the potential users, whose incentives to use the ORT will be fundamentally affected by the economic environment they face. Users' ability and willingness to pay for ORS will be fundamentally determined by their income levels and their health utilization and expenditure patterns. A government subsidy policy, as a subset of its pricing policy, may be a necessary incentive to stimulate end-use.

This step in the analysis can be conceptualized as a matrix. Along one axis are the policy measures and along the other are the entities. The cells are filled with the nature of the effect of the measure on the entity (i.e., +,-,0) (see Figure 8, Annex 1).

4. Recommend Corrective Actions

The final step in the analysis is to recommend changes in those existing policy measures which have been identified as having a negative incentive effect. Recommendations for the implementation of new measures which would create positive incentives can also be identified. Given the limited amount of time available to the analyst, it is likely that such recommendations will have to be tentative and will stress the type of additional analysis needed to develop more fully the action steps.

6.3.4 Affordability and Sources of Financing

For a given country, a fundamental issue to address from the financing perspective is whether ORT programs and activities will establish financial and economic precedents that the country cannot sustain. Although ORT expenditures tend to be small relative to total health sector expenditures, commitments either to internal reallocation of resources, to ongoing exchange requirements, or to large expenditures for activities such as media campaigns may be difficult to sustain over time. The chief concern is whether the financing entity that is expected to commit resources to the program, either the health ministry or any other group, will be able to provide these resources over the long term. While earlier sections required an estimation of the projected incremental costs for undertaking alternative ORT programs/ activities, it is necessary here to identify the current funding sources for ORT and to assess approaches for augmenting these resources.

The funding sources for ORT resemble the alternatives for other primary health care services. A useful classification is to distinguish between community sources and institutional sources.

Out-of-pocket payments by individuals or households for services, drugs, and/or prepayments for coverage and insurance, as well as community labor,

also constitute sources of funding for ORT programs and activities and/or ad hoc contributions and fund-raising efforts. Private spending for health care services ranges between 40 to 88 percent of the total health care expenditures in developing countries. Drug sales and service fees are the most common expenditures out-of-pocket. The analyst will need to identify sources of information which indicate household willingness and ability to pay for health services. Two approaches are suggested. The first is to identify types of facilities and/or providers which charge fees, what they charge for, and how large the fees are. The second approach is to assess consumer ability and willingness to pay, from information available in consumer expenditure surveys. Many countries carry out these type of surveys at periodic intervals, and even if they are several years out of date, the data can still prove quite useful.

The major government institution is usually the Ministry of Health. Regional and local governments, national social security funds, and private organizations such as religious groups and cooperatives also constitute sources of funding. These institutions, organizations, or groups must have: access to sufficient resources, net of requirements for other activities; access to new revenue sources; or be willing to reallocate resources from current activities. Assessing the affordability issue for institutions and organizations requires as much judgment as calculation. Calculations can be structured to first look at the overall level of health expenditure and the current allocation of these resources within particular institutions such as ministries of health or social security institutes. The data to be assembled here include: identification of sources and levels of funding by institution or group; a breakdown on the composition or allocation of current expenditures; and an assessment of future resource availability based on past requirements and trends. Figures 9 and 10 (see Annex 1) illustrate how this information on sources of funding might be summarized.

Sources of funding to support the program must be stable over the long term. Assessments should be made as to: whether health ministries and/or other institutions and organizations have a reasonable likelihood of receiving sufficient budget allocations to cover future recurrent costs of program activities and/or whether they can redirect resources from current programs; whether local governments and/or communities would be able to supply resources; whether users of the programs are able and willing to bear the fees and other costs for obtaining program services.

Cost and budget analysis of ORT activities can have meaning only in direct relation to the informational needs of decision-makers. PRITECH teams assigned to assist in the development of a national ORT program require financial analysis which assists policymakers in choosing between alternative means of implementing new programs and activities. The initial step in assessment and programming is, of course, to identify the appropriate questions which financial analysis is expected to help answer. Questions regarding relative and absolute cost of any activity need to be framed so that there is some standard point of reference.

FINANCING

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 6.

A. Incremental Costs of ORT

1. What are the incremental costs of adding or expanding ORT programs and activities?

   - in communications?
   - in production and distribution of ORS?
   - in training and education?
   - in management of information systems?

2. Can the functional cost categories and the timeframe of costs be adequately identified?

3. What dependence on foreign exchange is implied by these costs?

B. Incremental Effects

1. What process measures can be used as surrogates for estimated expected effects?

   - in communications?
   - in production and distribution of ORS?
   - in training and education?
   - in management of information systems?

2. What are the expected incremental effects of adding or expanding ORT programs and activities?

C. Incentives

1. What are incentives/disincentives that can/do play an important role in affecting outcomes of ORT programs and activities?

D. Public Expenditures, Composition, and Trends

1. What are the recurrent expenditures of public-sector health institutions (MOH, Social Security, Regional or Local Government) over the last 5 years?

2. What are the trends in these expenditures as a share of national budget and in constant value?

3. Have there been recent significant capital expenditures which would imply large increases in future recurrent expenditures?

4. What has been the distribution of expenditures over the last 5 years between:

   - primary vs. secondary/tertiary services?
   - preventive vs. curative activities?
   - low technology vs. sophisticated facilities?
   - personnel vs. drugs and supplies?

5. What are the trends in these categories of expenditures?

6. What specific expenditures on ORT activities and programs with public-sector health institutions can be identified at the local, regional, or national level?

   - what are the sources of funding for these expenditures?
   - what trends are evident in sources of funding and level of expenditure?
   - what priority is accorded ORT as evidenced by these trends?

7. What potential exists for public institutions as funding sources for ORT programs and activities expand?

E. Private Expenditures, Composition, and Trends

1. What expenditures by other institutions/organizations for PHC (or specifically for ORT) can be identified over the last 5 years?

2. What are the trends in these expenditures?

3. What is annual average household expenditure for health care? What percentage of this total is spent on pharmaceuticals? Are there differences in expenditure by income group?

4. What are the trends in balance of effort between the public and private sectors?

5. What is the potential for funding expanded ORT activities and programs through private expenditures?

ANNEX 1

FIGURE 2
WORKSHEET FOR DETERMINING INCREMENTAL RECURRENT SALARY COSTS

Item		Source of Data or Calculation
a)	List of paid workers to be involved in selected ORT activity (by position)	Personnel roster for each facility or activity.
b)	Annual full-time salary for each position	Obtain salary schedule, including any allowances, from agency administering civil service.
c)	Fraction of time worker will be involved in ORT activities if less than full time	Observation of current activity or reasoned guesstimate.
d)	Annual salary of workers for ORT	Multiply actual full-time salary (b) by fraction of time involved in ORT activities (c) for each position.
e)	Annual salary of all workers for ORT	Add annual salaries of all workers.

Source: FOR FIGURES 2-7:
Don S. Shepard, 1984,"Guidelines for Projecting Costs and Developing Budgets for Selected Primary Health Care Activities," Institute for Health Research, Harvard School of Public Health, prepared for PRITECH.

FIGURE 3
WORKSHEET FOR ESTIMATING INCREMENTAL RECURRENT COSTS OF ORT SUPPLIES
(Example: Supplies to Health Facility)

Item	Source of Data or Calculation
a) Purchase of ORT packets, intravenous fluids, other diarrheal medicines, vaccines, and other PHC supplies	Aggregate to yearly totals if monthly or weekly summaries of drugs dispensed are kept from patient medication registers. Increase by loss factor of 33% (or actual rate, if known) for damage, loss, and unreported use. Or, calculate total of all drug shipments received during past year for each item. If inventory recorded at beginning and end of year, calculate inventory additions for each drug (ending inventory less starting inventory), and subtract from total receipts. Or, institute prospective monitoring system for supply use during randomly chosen weeks.
b) Unit cost of major supplies	Use recent supply invoice, order, price list, or catalogue. Add any explicit handling or shipping charge.
c) Annual cost of each supply item	Multiply total number of items (a) by unit cost (b) for each item.
d) Annual cost of all supply items	Add annual cost of each item (c).

FIGURE 4
WORKSHEET FOR ESTIMATING INCREMENTAL RECURRENT TRANSPORTATION COSTS

Item	Source and Calculation
a) Total annual operating cost of vehicle or vehicles in whole or part for selected ORT activity	From manager of garage responsible for vehicles, obtain and add: - purchases of spare parts, fuel, and other supplies - labor (salary) costs of garage personnel and drivers (if not counted elsewhere).
b) Fraction of use (distance or days) of vehicles for trips for ORT programs/ activities	Observe current use or reasoned guesstimate.
c) Annual vehicle operating cost for ORT	Multiply total annual operating cost of vehicle (a) by fraction of vehicle use on ORT (b).

FIGURE 5
WORKSHEET FOR ESTIMATING RECURRENT COSTS OF ONGOING HEALTH EDUCATION AND TRAINING

Item	Source and Calculations
a) Workers who will receive ongoing health education or training	Workers in jobs where they traditionally do not stay for more than one year, or Workers needing refresher training, or Day residents needing health education.
b) Total annual training costs	Add educational, living, salary, and incidental costs.

FIGURE 6
WORKSHEET FOR ESTIMATING RECURRENT COSTS OF MANAGEMENT, SUPERVISION, AND GENERAL SUPPORT

Item	Source of Data and Calculations
Overall Costs of Management and Supervision	
a) Annual salary costs of management, supervision, and support	Compute the total annual salary cost for all managerial and supervisory personnel, as in Figure 2. Include general management, accounting, storeroom personnel, watchmen, cleaners, etc.
b) Annual supply and miscellaneous costs management, supervision, and support	Compute annual costs of all supplies used in management, and supervision, and general support, using procedures in Figure 3. Include stationery, and miscellaneous utilities, and miscellaneous expenses for maintenance and upkeep of facilities used for providing or managing ORT services.
c) Annual transportation costs of management and supervision	Compute costs of vehicles used in general management and supervision, using procedures in Figure 4.
d) Annual ongoing training costs	Compute costs of general training in management and supervision in using procedures in Figure 5.
e) Overall annual costs of management and supervision	Add management costs (a) plus supply costs (b) plus transportation costs (c) plus training costs (d).
f) Salary costs of personnel providing PHC supplies and services, and education	Use item (e) of Figure 2.
ORT Fraction for Management and Supervision	
g) Salary costs of all personnel in all specific programs providing direct services using the management and supervision resources	Use item (e) of Figure 2.

h)	ORT fraction for management	Divide salary costs of personnel treating diarrheal disease (f) by total salary costs (g).

Costs of Management, Supervision, and Support Allocated to ORT

i)	Annual costs of management, supervision, and support for ORT	Multiply overall management costs (e) by fraction of management costs attributable to diarrhea treatment (h).

FIGURE 7
WORKSHEET FOR ESTIMATING FOREIGN EXCHANGE COSTS
OF SELECTED PHC ACTIVITY

	Item	Source and Calculations
a)	Costs of imported supplies (or supplies with imported ingredients)	See worksheet on recurrent costs of supplies (Figure 3).
b)	Import fraction of each component	Use 100% if totally imported. Use ingredients cost as percent of total cost if imported ingredients.
c)	Foreign exchange cost of supplies	Multiply (a) times (b) for each supply and add products.
d)	Costs of major imported components of transport: fuel, lubricants, tires, spare parts, etc.	See worksheet on transportation costs; consult garage manager.
e)	Import fraction for each component	Use 100% if totally imported. Use ingredient cost if locally manufactured with imported ingredients.
f)	Overall import fraction	Multiply (d) times (e) for each component, add the products, and express as a percentage of total recurrent cost of vehicles used for PHC.
g)	Foreign exchange cost of selected ORT activity	Add (c) and (h). If necessary, perform calculations like (d) through (g) for other cost categories and add results.

FIGURE 8
POLICY IMPACT MATRIX

POLICY MEASURES	ENTITIES		
	SUPPLIERS external/internal producer/importer	DISTRIBUTOR public/private/PVO	USERS urban/rural
TRADE			
FISCAL			
MONETARY			
INVESTMENT			
INDUSTRIAL			
SALARIES			
DISTRIBUTION			
PRICES			
SUBSIDIES			

FIGURE 9
TREND SUMMARY OF ANNUAL EXPENDITURES

	1980		1981		1982		1983		1984	
	Health Total $	PHC $ %	Health Total $	PHC $ %	Health Total $	PHC $ %	Health Total $	PHC $ %	Health Total $	PHC $ %
Actual Expenditures										
Recurrent										
personnel										
training										
supplies										
health communications/education										
research/data collection/evaluation										
Capital										
construction										
vehicles										
other equipment										

Figure 9 should be applied to each of the institutions and organizations identified as sources of funding for ORT activities and programs. Primary health care expenditures may be difficult to separate from the total health care budget, especially for all the categories; at a minimum, however, hospital expenditures could be identified separately, and the residual could be treated as an overestimation of expenditures for primary health care. If expenditure categories cannot be identified, at least current and recurrent costs should be identified.

FIGURE 10
TREND SUMMARY OF SOURCES OF ANNUAL EXPENDITURES FOR ORT

	1979	1980	1981	1982	1983
Public					
Health Ministry					
State/Local					
Social Security					
Other					
Subtotal					
Private					
Employers					
Households					
Community groups					
Other					
Subtotal					
Grand Total					

ANNEX 2
CAPITAL COSTS OF PHC ACTIVITIES

This annex describes procedures to determine capital costs of PHC activities. It is framed in terms of ORT activities, although the concepts apply equally to other PHC activities.

Capital costs are first estimated for an overall health program, of which CDD is a component. Then they are allocated according to share of use if the capital is used for other than the diarrheal disease program.

Annual costs of capital are determined by dividing the initial cost by a present value factor based on the expected working life (in years) and a rate of interest. The rate of interest may be available from estimates of shadow prices by the Ministry of Finance. The rate should be a real rate (i.e., net of inflation). Rate of interest must be considered because it indicates how much return could have been obtained from capital investments if they had been available for another productive sector of the economy. In the absence of direct data, it is recommended that an estimate of 10% per year be used for the rate of interest.

For an interest rate (r) of 10%, the present value (P.V.) factor for various years of use (n) is given below. Additional values can be found in financial tables.

Number of Years (n)	Illustrative Use	P.V. Factor
3	Vehicles	2.487
8	Equipment	5.335
20	Buildings	8.514

Then,

$$\text{Annualized cost} = \frac{\text{Initial cost}}{\text{P.V. Factor}}$$

Source: Donald Shepard, 1984, "Guidelines for Projecting Costs and Developing Budgets for Selected Primary Health Care Activities," Institute of Health Research, Harvard School of Public Health, prepared for PRITECH.

The higher the interest rate (r) and the shorter the expected life (n), the smaller is the P.V. factor and the greater is the annualized cost. For convenience, very small one-time costs (amount less than $10) will be considered as recurrent costs.

Vehicles are required for transporting personnel, equipment, and supplies. To determine the annualized costs of vehicles, data are required on the acquisition cost of the vehicle, its assumed life, and the rate of interest (see Figure 11). The acquisition cost should be obtained from the agency that purchased the vehicle. If purchased more than a year ago, the cost should be inflated to current prices. In the absence of direct data, values from other projects can be used as estimates. The assumed life of a vehicle should be based on past experience with vehicles in similar situations. In the absence of direct data, the range of three to five years can be used. If the distances are great and the roads poor, then a life of about three years will probably apply. If only one vehicle is involved, vehicle costs are relatively low, so the rate of interest makes little difference.

Finally, the fraction of use needs to be estimated if a vehicle is not used exclusively for ORT activities. In some regions, log books are maintained for each vehicle, giving the time, purpose, and distance for each trip. If such data are available, then vehicle use should be apportioned on the basis of the proportion of distance.

If such data are not available, then a trip made primarily for a CDD program should have the total distance allocated to that purpose. If the trip was made only secondarily for CDD, then half or less of the total distance should be allocated to CDD.

Sometimes cost analyses are needed at the level of a health center, whereas vehicles are controlled by district or regions. A vehicle may make a circuit around the district, delivering ORS supplies to each health center. In that case, the vehicle's costs need to be allocated among all the facilities in its districts. The fraction allocated should be the inverse of the number of facilities served, if each facility received roughly equal attention. If more populous areas tend to receive more attention, the fractions should be the share of the district's population served by the facility under analysis.

Buildings

Buildings may be used to provide ORT treatment and education, space for administering programs, storage and distribution of ORT supplies, and staff housing. Costs of buildings should follow similar procedures as those for vehicles (see Figure 12). The initial cost should be estimated as the current replacement cost. Replacement cost, which gives construction cost in current prices, is generally available from agencies or donors considering construction of similar buildings. The expected lifetime should be about 20 years for a small building of local construction, and 40 years for a major building of modern construction. The interest rate should be the same as that for vehicles.

The fraction of use allocated to ORT in multi-purpose buildings depends on the floor space used exclusively for ORT. Floor areas not used for any specific program, such as corridors, waiting area, and administrative offices, are not counted. The ORT fraction is calculated as:

$$\frac{\text{Floor area used for ORT activities}}{\text{Floor area used for all programs}}$$

The formula allocates cost of these areas implicitly between ORT and other programs as an overhead expense.

Usually, there is not part of a building reserved exclusively for diarrheal disease. In most health services, there is a general area for outpatient medical treatments of all types, including diarrheal disease. In that case, the capital costs of buildings should be considered as a general cost of the outpatient facility. The share devoted to treatment of diarrhea in children is probably best estimated as the proportion of visits for diarrhea in children.

Equipment

This cost is generally of minor importance in ORT activities (see Figure 13). At the national level, however, ORT activities may require office equipment, or equipment for producing ORS packets. If there is any equipment, the interest rate should follow that for other capital. Initial cost should be estimated as the current replacement cost. The expected life should be reasonable for the piece of equipment, a typical life expectancy being five years.

Recruitment and Initial Training: Costs of Personnel

Estimates of training costs must be inflated by both pre- and post-employment attrition. Some persons are trained who never begin the occupation for which they were trained; others may leave or be transferred shortly after beginning. Past experience should be used as a guide to estimate these losses. If 20% of those in training left before completion of the course and 20% left shortly after training was completed, then overall employment would be only 64% (80% times 80%) of persons trained. For every two workers needed on the job, about 3 (i.e., 2/.64) would have to be trained. The capital costs of training should be based on the number of workers who enter training, not the number who ultimately make use of the training over the long term (see Figure 14).

FIGURE 11
WORKSHEET FOR ESTIMATING ANNUAL COSTS OF VEHICLES

Item	Source of Data or Calculation
Annualized Cost of Vehicle	
a) Acquisition cost of vehicle at time of receipt	Records of agency that purchased vehicle. Use costs from other projects to validate or fill in for missing data.
b) Expected life of vehicle	Past experience with similar vehicles in similar areas. Or range of 3 to 5 years (median, 4 years).
c) Rate of interest	Ministry of Finance, Social Accounting Rate of Interest (SARI). OR general rate of 10%.
d) Present value factor	Calculate or obtain from table.
e) Annualized cost of vehicle	Divide the acquisition cost (a) by the present value factor (d).
f) Use of vehicle (days or distance) on trips where ORT program under analysis was the primary purpose	Vehicle log book (miles or kilometers) schedule (number of work days).
g) Use of vehicle on trips where ORT activities were a secondary purpose	Same as (f). NOTE: Secondary purpose means that trip was scheduled according to the needs of some other program, but needs of ORT activities require that the trip be conducted at same time. The factor is 0.5.
Fraction of Use and Cost Allocated to CCD	
h) Total vehicle use allocated to ORT in year	(f) times 1.00 plus (g) times 0.50.
i) Total use of vehicle in year for all purposes	If distance used above, then obtain total vehicle distance in year. If days used, estimate total days in year vehicle used for office travel.
j) Fraction of vehicle use allocated to ORT	Divide use for ORT (h) by total use (i).
k) Annualized cost of vehicle	Multiply annual cost of vehicle (e) by fraction of use allocated to ORT (j).

FIGURE 12
WORKSHEET FOR ESTIMATING ANNUAL CAPITAL COSTS OF BUILDINGS

Item	Source of Data or Calculation
a) Replacement cost of building	Construction estimates for similar buildings recently completed or currently under construction.
b) Expected life of building	Experience of similar existing buildings.
c) Rate of interest	See vehicles, item (c). (General rate is 10%).
d) Present value factor	Calculate or obtain from table.
e) Annualized cost of building	Divide replacement cost (a) by the present value factor (d).
f) Fraction of building used for ORT	Allocation based on: -fraction of floor area; -or fraction of patient visits (see text).
g) Annual capital cost of ORT	Multiply annualized cost of the building (e) by the fraction of building used for ORT (f).

FIGURE 13
WORKSHEET FOR OBTAINING ANNUAL COST
OF EQUIPMENT

Item	Source of Data or Calculation
a) Current replacement cost of equipment	Records of: -agency purchasing equipment; -or, quotation from supplier.
b) Appropriate present value factor	Use appropriate life for equipment based on experience or supplier's specifications.
c) Annual capital cost	Divide current replacement cost (a) by the appropriate present value factor (b).

FIGURE 14
WORKSHEET FOR OBTAINING ANNUAL COST OF
INITIAL TRAINING

Item	Source of Data Calculation
a) Educational cost	Tuition or fees paid for training, if applicable Or cost of salaries, incidentals and administration for teachers of training program (See section on salaries in recurrent costs, below)
b) Living cost of workers being trained	Cost of providing room and board, plus per diem allowance.
c) Salary cost of workers	Multiply weekly salary of worker being trained (if paid during trianing) times duration of training, in weeks.
d) Incidental cost	Cost of training facility, transportation, and recruiting trainees.
e) Total capitalized training cost	Add education costs (a), living costs (b), salary costs (c), and incidental costs (d) for each training program, and combine programs.
Expected Time on Job	
f) Number of persons leaving job for which trained during year (through termination, promotion, etc.)	Civil service records or informal survey.
g) Average number of persons in job for which trained	Payroll, personnel, or civil service records (can approximate).
h) Turnover rate from job for which trained	Divide number of persons leaving (f) by the average number of persons working in job (g).
i) Expected time in job for which trained	Experience of other programs, or the inverse of (h). (That is, if h is 0.25 per year, then the inverse is 4 years).

FIGURE 14 (cont.)

Item	Source of Data Calculation
Annualized Training Cost	
j) Present value factor	Calculate or use table, using expected time in (i).
k) Annual training cost	Divide total training cost (e) by the present value factor (j).

CHAPTER 7: ORGANIZATION AND MANAGEMENT OF ORT PROGRAMS AND SERVICE DELIVERY SYSTEMS

Jon Rohde
John LeSar

7.1 INTRODUCTION

Having explored the implications of national policies, strategic and operational planning, and financing for ORT programs, it is important next to assess how the ORT programs and service delivery systems are organized and managed. Organization may be defined as the structure by which programs are managed so that plans can be implemented and evaluated. Organization encompasses the relationships between and within program components. For ORT programs, organizational structure generally involves a central committee, central staff, regional and more peripheral staff, and technical staff. It includes the relationship between management and the delivery of services, as well as the implications of the budget for all aspects of the program.

ORT program management involves a number of ongoing routine activities including work planning; management of the external environment; scheduling of services and workers; personnel management; supply management; information systems management; financial management; revising and updating the program; maintaining acceptable performance; and finding/maintaining an organizational niche. There are two phases to program management: the start-up and the steady-state phase. At this time, most ORT programs are still in the start-up phase, (as opposed to immunization programs which have entered the steady-state phase in many countries).

7.2 EXPERIENCE TO DATE/LESSONS LEARNED

7.2.1 Summary of PRITECH and Other Relevant Findings

A. Organization

Findings to date about the organization of ORT programs are extremely varied. In general, however, most of the countries surveyed lack organizational structures that are sufficient to plan, implement, and evaluate a program that is likely to achieve widespread, effective use of ORT in children under age five on a national basis. The reasons for this are that most countries have only recently begun to focus on control of diarrheal diseases (CDD) programs, frequently adding CDD to the responsibilities of existing MOH departments without clearly analyzing their management needs. Often a committee for combatting diarrheal diseases has been established, and occasionally one or more full-time technical or managerial staff have been added to the existing complement of MOH professional personnel. More often, however, the program is headed by a part-time person who has had the CDD program added to his/her existing duties.

The general absence of separate CDD programs with full-time directors is compounded by the fact that ORT is only one of four strategies advocated by WHO for CDD. Given this combination of circumstances, it is easy to see that the ORT program seldom has adequate staff at the central level. This lack of required staff is equally acute at regional, provincial, and district levels.

What is missing from the organization of ORT programs in most of the countries visited is, above all, a staffing pattern geared to the most effective program management and evaluation. To remedy this lack there should be a committee with a clear job description; a central staff with a thorough understanding of roles and responsibilities; and a staff that embodies technical skills related to all the components of the program.

The other features that are frequently lacking are a clear and consistent relationship between central management and field operations, and a full understanding of (and, where feasible, control over) program budgets. A realistic national plan should incorporate these organizational elements to achieve the objectives of the strategic plan and carry out the activities of the operational plan: widespread, effective use of ORT within a specified time period, through public education and multi-system primary health care approaches.

B. Program Management

Since most ORT programs are in the start-up phase, it is not surprising that progress in management is uneven. The technical content which shapes the ORT program is often inconsistent within a given country and may not reflect the most current information. Work plans rarely contain detailed plans for improving ORT in the community or in hospitals, although clinic-based services are usually better defined. Most countries need to strengthen the relationships between the case management approach to ORT and other CDD approaches (improved maternal and child health, environmental health, and epidemic control, for example). The relationships of ORT to child survival service delivery strategies and other PHC strategies are likewise variable and often ill-defined.

For ORT programs to reach their objectives, one key set of management tasks centers on managing the external environment. Program managers have to demonstrate the need for the program and develop and maintain a receptive environment that has political legitimacy, support of opinion leaders, trust and confidence of the population, and adequate funding. In the start-up phase, these activities are as important as the service delivery activities themselves. Experience indicates that the universality of diarrhea; the fatalistic acceptance of child, especially infant, deaths; and the simplicity of the ORT technology often result in limited receptivity to ORT among the general population, along with resistance by health professionals to this "simple" approach. Service delivery management, therefore, usually must include promotion within the medical, nursing, and pharmacy community, beginning with professional education initiatives as described in Chapter 15, "Education of the Health Professions for ORT."

The coordination and scheduling of service and educational activities in the start-up phase has been of great concern to many countries. Often, there is political pressure to move quickly into implementation. The use of mass media for public education is often scheduled before the service system or commercial system is ready to meet the swift rises in demand that this powerful method of communication can bring. It takes considerable time to mobilize the government and major non-government delivery systems, especially where community-based approaches are important components of the service system. The retraining of the work force takes much longer than usually planned. Supply systems management for ORT is variable, and in most

countries it is not at all clear that ORS packets are now or can easily be made regularly available through government health systems. The commercial networks for ORS are also just being developed, so that the average family does not yet have ready access to ORS seven days a week and in the evening or at night. Given all these factors, it is likely that many countries will have major setbacks in their ORT programs due to inadequate coordination and inappropriate scheduling of services and educational activities in the start-up phase.

Personnel management practices within the ORT program generally mirror the customary practices of the parent organization, whether government or non-government. At the present time, considerable effort is going, quite appropriately, into re-training existing service personnel to develop skills in the management of diarrheal disease and the use of ORT. There has been little attention given so far to incentives that would encourage health workers to improve performance in delivering ORT services; a notable exception is the BRAC program in Bangladesh which judges and pays its workers on the basis of the ability of village mothers to correctly use ORT following a visit by a BRAC worker.

Once ORT programs are under way, managers must monitor progress and use actual experience as a guide for revising and updating the program. Assessment teams have found that information systems for ORT are still rudimentary in most programs, so that monitoring of access to ORS and effective use of ORT is limited by reliance on highly speculative information.

Besides monitoring progress in service delivery, it is important for the ORT services to maintain acceptable performance by being consistent with program objectives, conforming to socially and organizationally expected behavior, and adapting to changes in the environment. The ORT program must find and stay within an organizational niche that works and is protected from competitive bureaucratic pressures. Most programs are doing well in these areas, although at this early phase of development, their adaptive abilities are yet to be tested.

From observing successful ORT programs, a number of lessons have been learned about effective organization and management:

Lesson 1: The organization and staffing of an ORT program should reflect the objectives, strategies, and components of the program.

The ORT program requires full-time direction and a staff of sufficient size and capability to manage what will be, in most countries, a multi-system, mixed public- and private-sector effort. The tasks of the managers may require skills less commonly found in many Ministries of Health.

Lesson 2: The ORT management structure must have the ability to involve, with varying degrees of intensity, all relevant components of the health system, and ORT must be viewed as a responsibility of virtually everyone from the mother to the Minister of Health.

Experience indicates that the position of the CDD and/or ORT program in the Health Ministry and the organizational relationships between ORT program managers and service units, especially hospitals and peripheral field units,

is crucial to the ability of the ORT program to effectively reach its objectives. It is highly desirable for the program to have clear lines of responsibility with other management units, have its own budget, and be able to contract with the private sector.

Lesson 3: The role of the MOH is to coordinate the program, not to attempt to carry out all tasks.

The successful programs use a variety of mechanisms to carry out the work: the MOH service delivery system, non-government delivery systems, individual practitioners, public and/or private radio and advertising systems; pharmaceutical firms, etc. The role of the MOH is to coordinate these organizations (and any others required) to carry out the objectives of the program.

Lesson 4: The medical profession must understand and promote ORT for programs to succeed.

In view of the difficulty of converting doctors and other health professionals to ORT, a number of countries have attempted to introduce ORS through commercial systems and peripheral community health workers only, allowing the fixed health facilities and private sectors to continue older, less effective, and more expensive methods. These attempts have almost invariably failed, despite an initial enthusiasm for the new technology. Unfortunately, there are no short cuts to the implementation of a national ORT program. Successful programs take advantage of the public confidence in the wisdom of the medical profession and put considerable program effort into promotion and educational programs for the medical profession to gain their support for ORT.

Lesson 5: An appropriate balance between vertical and integrated approaches is necessary for success.

While it is essential at the field operational level to integrate CDD activities into primary, secondary, and tertiary health care, commitment and resource adequacy are demonstrated and enhanced by an identifiable CDD Unit with full-time personnel at central and regional levels.

Lesson 6: All important parts of the health system must be mobilized and the start-up process carefully paced.

Experience shows that successful programs give adequate management attention to detailed work planning for the community and hospital levels; to coordination of services and educational activities; and to supply management.

Lesson 7: The development of simple but effective information systems is essential to program success.

An almost invariable finding is that ORT programs require revisions and adaptation. Only through practical, usable, and relevant information systems can managers determine how and where ORT use is increasing and identify strengths and weaknesses of the program.

7.2.2 Summary of Constraints

A. Many countries have neither a full-time ORT program manager nor additional central staff to effectively manage an ORT program.

B. Most countries lack adequate staff for planning and coordination of service delivery activities beyond the MOH in both the public and non-government sectors; for planning of public education programs; for coordination with commercial sales programs; for organizing and promoting professional education; and for overseeing the support systems.

C. Work plans lack sufficient detail and rarely plan adequately for the community and hospital levels.

D. Implementation plans in the start-up phase are often too ambitious; educational activities are often scheduled to begin before the requisite services and support systems are ready.

E. Information systems are often too rudimentary to allow managers to monitor progress in access to ORS and effective use of ORT.

F. In some countries, ORT services have been hampered by an identification with such controversial programs as family planning, creating a popular perception that ORT is a form of birth control.

G. Some countries, often with donor assistance, are promising more dramatic results than mothers may experience from using ORT, so that ORT use is discontinued after a few trials.

H. There is often inadequate financial support of the program to expand coverage widely, so that expectations are raised beyond a sustainable level.

I. Both supervision and reporting of performance by administrative units need considerable improvement if there is to be systematic quality control of worker performance regarding ORT. This lack is critical when program objectives are to make mothers and other family members relatively self-sufficient in treatment of diarrhea with ORT.

J. In many countries, frequent transfers and high vacant post rates make family and community relationships difficult.

7.2.3 Summary of Options

Approaches to ORT program organization and management can rarely be viewed as either/or options; the complexity of the various alternatives reflects the great number of variables within any given country. Thus we have chosen to treat these alternatives more fully and to present them as probable issues in the following section.

7.3 PROBABLE PRINCIPAL ISSUES

7.3.1 Organizational Issues

A. The Committee

The choice of organizational structure to achieve the goals and objectives of ORT programs ultimately depends on the nature of the strategic and operational plans and on the current organizational structures and relationships in the given country. When a national CDD program exists, it is usually best to have a multi-disciplinary CDD committee acting as a "board of directors" to provide broad guidance to the CDD program. For ORT programs, a subcommittee of the overall committee is useful.

The composition of the CDD committee again depends on the plans, but, in general, it should comprise senior MOH professionals and administrators, including CDD specialists; the coordinator of rural services; the coordinator of hospital services; the director of nursing education; the pre-service and in-service training coordinator; and the health education coordinator. It should also include a representative of the Ministry of Planning (or of whatever Ministry oversees health from the broad country planning perspective); a representative from the Ministry of Public Communications; a representative from the Ministry of Education, especially if medical education is based there; one or more representatives from the major non-government sources of care (PVOs, cooperatives, etc.); a representative from the pharmaceutical industry; and a representative from the national medical, nursing, and pharmacy associations.

It is important for assessment teams to determine the composition of the committee or subcommittee; the frequency of meetings; the functional role of the committee vis-a-vis the staff of the ORT program; and the way in which decisions are made (by consensus, by voting, etc.)

2. Staffing of the ORT Unit

The most important aspect of organizational structure is the ORT program unit in the MOH. In nearly every country, a full-time ORT program director is needed. S/he should have at least enough staff to function as a secretariat to the ORT committee. The quantity, composition, and skills of the central staff are obviously dependent on the size of the country and on the strategic planning approach. But, whatever its size and composition, the staff should be able to carry out tasks in the areas of planning; coordination of public-sector ORT activities outside the MOH; coordination of non-government ORT activities; public education; rural services; hospital services; training; ORS supply; education of the medical, nursing, and pharmacy professions; information systems development; quality control/supervision; and monitoring and evaluation. There need to be strong linkages to regional, provincial/state, and district levels, and there must be staff available at these levels to carry out all assigned tasks.

3. Position of the ORT Program within the Ministry of Health

For the ORT program to be maximally effective, it needs managerial support from the highest levels of the Ministry of Health; an adequate budget to carry out its management functions; clear relationships with service system managers responsible for community, clinic, and hospital-based services; ability to influence other Ministries whose work impinges on the ORT program; and ability to contract for outside services.

4. Centralization/Decentralization

There is seldom a chance to opt for centralization or decentralization in ORT programs, since they usually adhere to the patterns of the parent organization, whether public or private. However, since ORT is intended to be family-centered, it is important to consider what effect the current organizational patterns will have on this objective. In general, the closer the decision-making to the community level, the slower and more variable the start-up phase but the more likely long-term sustainability and institutionalization.

7.3.2 Program Management Issues

A. Pacing of the Start-up

The choice of a slow or fast start-up is difficult. A slow start-up allows more careful planning and preparation of the various components of the program before beginning services and educational activities for the population. On the other hand, a slow start-up may fail to adequately mobilize and maintain the interest and political support of the professional communities. A fast start-up has the opposite problems.

Experience thus far supports the view that a fast, highly visible start-up is important to mobilize political and financial support, with a careful phasing of key activities, based on the time required to accomplish them. For example, early attention should be given to having ORS supplies in place so that services can begin as soon as possible. Early mass media efforts should be used to raise awareness about diarrhea; mass media campaigns to increase demand for ORS should come later.

B. Integration with Other PHC, Child Survival, and CDD Activities

An ORT program, far from being a disease-specific vertical activity, is a paradigm for the entire operation of a national health system, including planning and budgeting; training of health professionals; implementation of clinical practices in all facilities; and extension to the lay public, as well as to traditional healers and individual households. As such, ORT should usually be implemented in the public sector by the cadre of health workers already in place, including various community-based, clinic-based, and hospital-based workers. The management issue is how to do this in the start-up phase and how to establish a productive relationship between ORT program managers and managers of these various components of the health system.

One option is for ORT program managers to have line authority over workers throughout the system. This is generally unworkable and undesirable in most countries. Rather, it is more useful for line managers of health programs, usually organized on a geographic and administrative basis, to maintain authority and accountability while ORT program managers influence them through the planning and monitoring process. The formation of a diarrheal disease committee can facilitate this approach.

C. Special Incentives

It is clear that special incentives, especially of a monetary nature, give better results in the short run in a variety of programs. The management issues here are whether ORT is of high enough priority to favor the use of incentives; whether incentives are effective in the medium term or just the short term; whether such incentives are harmful in terms of the social contract between health workers and their clients; and whether they are affordable.

ORGANIZATION AND MANAGEMENT

ASSESSMENT CHECKLIST

I. Organizational Issues

A. The Committee

1. Is there a multi-disciplinary CDD committee providing broad guidance to the CDD program?

2. Does the committee include representatives of all the relevant units of the MOH; of other involved Ministries; of the major non-government sources of care; of the pharmaceutical industry; of the national medical association; and of other health professional associations?

3. How often does the committee meet? What is its functional role vis-a-vis ORT program staff? How are decisions made?

B. Staffing of the ORT Unit

1. Is there a full-time ORT program director?

2. Does s/he have enough staff to function as a secretariat to the ORT committee? Can the staff carry out tasks in planning; coordination of public-sector ORT activities outside the MOH; coordination of non-government ORT activities; public education; rural services; hospital services; training; ORS supply; education of health professionals; development of information systems; quality control/supervision; and monitoring/evaluation?

3. Is ORT staff available to carry out the above activities at provincial/state and district levels as well as at the central level?

C. Position of the ORT Program within the Ministry of Health

1. Does the program have support from the highest levels of the MOH?

2. Does it have adequate budget to carry out its management functions?

3. Are there clear relationships with managers responsible for community-, clinic-, and hospital-based services?

4. Is the program able to influence other Ministries whose activities interact with the ORT program?

5. Is it able to contract for outside services?

D. Centralization/Decentralization

How will organizational patterns in this area affect the achievement of a family-centered program, its long-term sustainability, and its eventual institutionalization?

II. Program Management Issues

A. The Pace of Start-up

1. Is the start-up paced fast enough to capitalize on professional interest and political support?

2. Is it slow enough to allow for careful planning and preparation of program components before services begin?

3. Are key activities phased according to the length of time they take to implement and the interrelationships among them?

B. Integration with other PHC, Child Survival, and CDD Activities

1. Is the ORT program being implemented by existing health workers at the hospital, clinic, and community levels?

2. What is the relationship between ORT program managers and line managers for other health programs?

C. Special Incentives

1. Are monetary or other incentives in place for health workers?

2. Has the use or non-use of incentives been decided with careful consideration of medium- and long-term implications; of the social contract between health workers and their clients; and of affordability?

CHAPTER 8: PRIVATE-SECTOR ORT DELIVERY SYSTEMS

Nicholas Danforth
Alan Fairbank

8.1 INTRODUCTION

In identifying cost-effective ways to reach the target population with ORT technologies and information, no social, political, or cultural institution should be excluded from consideration. In many countries, non-governmental health service delivery systems reach at least as many people as do government agencies and could be tapped to support important public policy goals; in particular, assessment team findings indicate that health services relevant to diarrheal control - direct care, packets, training, etc. - are often being delivered outside the public health system.

Assessment of private-sector activities in any country obviously begins with the distinction between public and private sectors, often a thorny and self-defeating enterprise. For our purposes, the private sector is here defined as including private voluntary organizations, health insurance programs, cooperatives, health maintenance organizations, community organizations, non-governmental hospitals and clinics, and the wide variety of health practitioners - both formally trained and traditional - whose income is not provided by the government.

The public and private sectors have distinct roles to play in promoting social welfare. The private sector has economic mechanisms (price incentives) for promoting efficiency in the production and distribution of services, commodities, and information; in the absence of market distortions, the private sector can be expected to produce at least cost those personal curative health services for which persons are willing and able to pay.

The public sector, on the other hand, has political mechanisms - tax revenues and regulatory powers - for achieving goals unfulfilled by private activities; the public sector is relied upon to set minimum standards of safety and quality of care, to promote equity in the distribution of marketed services, and to produce non-marketable services and goods (e.g., preventive and promotive health services).

The assumption that the neediest - in both economic and health terms - can be reached only through free government-sponsored services is not warranted. In numerous developing countries, government (particularly Ministry of Health) activities and programs are overextended and underfunded. Public agencies are overburdened by current commitments, and the economic climate is forcing successive budget cuts in social services. To reach as large a proportion of the target population as possible, assessments must give serious attention to the potential role of the private sector, venturing into largely uncharted terrain.

The question which the assessment team must address is what public-private mix in a specific country can most effectively increase coverage of ORT programs and reduce infant mortality. On the one hand, because of market imperfections, the private sector does not always operate at least cost, and, when left unregulated, can rarely be expected to produce socially equitable

outcomes. On the other hand, whatever its purpose, method, or virtues, public-sector production of health services is almost never efficient, a fact which sometimes itself produces inequities.

PART I
THE NON-PROFIT PRIVATE SECTOR: PRIVATE VOLUNTARY ORGANIZATIONS

8.2 EXPERIENCE TO DATE/LESSONS LEARNED

8.2.1 Summary of PRITECH and Other Relevant Findings

Although this category includes cooperatives, some health maintenance organizations, community health organizations, and some non-health organizations capable of helping to implement ORT programs (for example, mothers' clubs), the assessments carried out thus far have not generally been able to look closely at the role of all these entities. Experience to date, then, is primarily focused on the private voluntary organizations (PVOs) which are, in a number of countries, the only providers of health services in many rural areas. Where this is the case, it may be essential to use existing networks of PVOs to reach rural populations with ORT. Any assessment of the potential of the private sector in rural areas should give careful consideration to existing efforts of PVOs in bringing primary health care technologies to the rural poor.

The early experiences of ten American PVOs* in delivering PHC to rural target populations have recently been evaluated by Management Sciences for Health. The conclusions of these evaluations highlight strengths of PVOs on which projects can build, and PVO weaknesses of which project designers should be wary.

All projects have succeeded, in different settings and using varied approaches, in providing modern, low-cost health services, usually to poor, rural families, most of whom would not otherwise have access to them. Analysis of results indicates, particularly in the more mature projects, that most targeted outputs (primarily health services delivered or health workers trained) are being met on schedule or exceeded. Because many projects do not collect or analyze adequate baseline or monitoring data, the impact of those outputs on morbidity and mortality is less evident. However, two projects have dramatically reduced child malnutrition, and at least half the projects have demonstrated such intermediate indicators of impact on maternal and child health as increased utilization of curative and preventive services.

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* "Indigenous" PVOs are also important private-sector organizations, but the distinction between "international" and "indigenous" may often be blurred. A few American PVO health projects (like those of Meals for Millions) operate at relatively low cost without a single expatriate, while some "indigenous" PVOs have predominantly expatriate staff and financial support. A more useful distinction may be whether the PVO works to strengthen its own or the government's health system.

Working with limited resources and formidable socio-economic constraints, these projects have been able to provide such innovative health services as oral rehydration and immunization in some of the Third World's poorest, most neglected, and most remote rural areas. All PVOs providing comprehensive PHC services at the time of the evaluations (eight of the ten) included basic ORT education for mothers. Most were distributing ORS packets supplied by government, though some had been hampered by delayed or irregular ORS supplies.

Although PVOs reach only a small proportion of the needy in any country, they often try new approaches requiring a level of independence and creativity not found in public-sector projects. They are able to test and demonstrate imaginative, cost-effective primary health care strategies primarily because of the hard work of their devoted staff members. The intensity of staff efforts is, in some projects, enhanced by the ability of the staff to work closely with individuals and communities in small, focused, controlled interventions.

Despite many similarities, three different types of PVO programs have emerged in our analyses. Although all three provide opportunities for PRITECH to demonstrate ORT effectiveness rapidly and inexpensively, it is important for assessment teams to consider their differences in deciding which PVOs to work with and how.

A. PVOs Working Within the MOH

Some PVOs have close ties to regional or central levels of Ministries of Health, supplementing their staffs with specialized skills (local or expatriate). Such PVOs have often brought fresh approaches and new managerial or technical strategies to conservative bureaucracies, proving to be effective intermediaries between the private and public sectors. They have the potential to promote ORT effectively in both sectors. For example:

1. In Honduras and Thailand, Meals for Millions runs a successful applied nutrition program within a regional office of the MOH. It accomplishes its objectives by coordinating many public and private nutrition-related activities in the region, training staff at all levels in improved nutrition strategies, and fostering better planning and monitoring. This program began in one small area with the PVO providing direct services, but as it grew to cover a wider area it concentrated solely on management improvements. Replicability and flexibility were key PVO attributes in this case, and ORT is among the several nutrition-related interventions which are more widely available now because of these successful efforts to strengthen the management capabilities of the host government.

2. In Bolivia, Project Concern has also strengthened government PHC services by improving health planning and coordination within the regional MOH office. It has brought the MOH into closer contact with traditional healers and other private health practitioners. Again ORT has become more widely available because of such PVO/MOH teamwork.

B. PVOs Working Independently Through Their Own Clinic Infrastructure

This type of PVO program is largely separate from government: instead of working to improve the MOH infrastructure, these PVOs work to improve their

own health systems. They have their own network of clinics and hospitals which are increasingly used as bases for outreach. PHC workers based in their home villages can be trained, supervised, supplied, and often paid by the nearest clinic. For example, the Adventists in Haiti and the Salvation Army in Pakistan provide ORT education and ORS packets from UNICEF and the MOH, in areas that cannot easily be reached by the government infrastructure. Where ORT is to be demonstrated on a substantial and sustainable basis outside the government, such independent PVOs may be the most practical vehicle.

C. PVOs Distributing Food

Private emergency relief agencies are not generally the most appropriate channel for the implementation of ORT programs, but there are PVOs which provide PL-480 food supplies as part of a longer-term development or nutrition effort. Such PVOs may well provide a base for ORT services if supported with training and technical assistance. Assessment teams would do well to determine which PVO food distribution efforts might provide a basis for ORT services and to assess the accomplishments and needs of the organizations that carry out these activities. For example, in Bolivia, PRITECH assists CARITAS in a program to reach 250,000 children with ORT through 1500 "mothers' clubs." These clubs have long been sponsored by CARITAS as a functional food distribution network; the eagerness of CARITAS to add ORT to the system has led to the training of health promoters in ORT distribution and education, in program planning and management, in ORS production, and in public communications. The project also encourages cooperation between CARITAS, the MOH, and UNICEF.

8.2.2 Summary of Constraints

A. Planning and General Management

Plans for PHC projects have often been drawn hastily, some without measurable objectives, technical analysis, or understanding of the existing local conditions. Much of the planning has lacked the participation of the host country government and, in most instances, of the recipients of services. Because of these deficiencies in planning, evaluators and assessment teams have generally concurred in the finding that the management of PVO projects in PHC needs improvement.

B. Health Information Systems

PVO health information systems, which are essential for effective performance by health workers at all levels, are usually rudimentary and need upgrading in order to explain and verify project effectiveness and impact. Death by cause, an important informant in planning and evaluating ORT, is rarely recorded. There is often inadequate exchange of data with the official health information system, such that activities by PVOs may not be reflected in national statistics.

C. Emphasis on Immediate Outputs

Pressure on the PVOs to show early results, with AID grants up for renewal every three years, leads to an emphasis on immediate outputs of health services, instead of the collaborative institutional development and training which might lead to longer-term sustainability and replicability.

D. Lack of Sharing of Project Experience

Few of the PVO projects assessed have been very successful in documenting and replicating their experiences with ORT. Lessons learned by project managers are often lost to the wider national and international health community because the PVOs, host country institutions, and USAIDs have no system for sharing project information. Well-designed monitoring and information systems could yield findings about effectiveness and efficiency which would be very useful to other private- and public-sector health planners. Because of their unusual ability to work closely with and often win the trust and support of communities traditionally wary of both outsiders and innovations, private organizations are uniquely able to test solutions to the problems of providing ORT. Without better information flow in all directions within private ORT projects, many valuable lessons will be lost.

8.2.3 Summary of Options

A. Use PVOs for Small-Scale Pilot Testing

Most developing countries have now initiated several scattered PHC demonstration projects which include ORT services. In areas where this is not the case, or where existing demonstration projects are not effective enough to be replicated, assessment teams should ascertain possibilities for technical assistance to PVOs which provide PHC to poor communities, helping them to demonstrate ORT in small, focused, well-documented experiments. The goal of such pilot tests would be to document accurately how ORT can dramatically reduce infant and child mortality within months at low cost.

PVOs frequently have had more experience than government health departments in providing community-level primary health care. They may in a better position to demonstrate rapidly the cost-effectiveness of ORT. The challenge will then be to document ORT cost-effectiveness clearly and to encourage replication on a larger scale.

B. Use PVOs as Intermediaries to Government

Another promising option is for PVOs which work with the MOH regionally or centrally to help strengthen ORT in MOH policy and planning and to improve management of ORT training and services. Upgrading the ORT capabilities of PVOs that work closely with the government may be the best mechanism for improving MOH policy and implementation in ORT. Such PVOs will need to demonstrate ORT cost-effectiveness in limited areas before the MOH is likely to replicate and expand ORT elsewhere.

C. Strengthen Existing PVO ORT Programs

Even when a PVO has begun to develop its own ORT capability, teams can assess its needs and consider ways of improving weaker program components. Such assistance might focus on improving ORT training of PHC workers, communications planning, development of educational materials, broadcasting, etc. Greater management flexibility may allow better results to occur in PVO activities than may be possible within government systems. The BRAC in Bangladesh program demonstrated convincingly that field workers can effectively teach mothers skills and knowledge needed to perform ORT

accurately, by use of clear objectives, good supervision, and a system of incentives. Governments may seek to replicate portions or all of this approach.

D. Strengthen PVO Networks

Assessments may indicate that it is not efficient to work with only one PVO at a time, attempting to directly monitor many small ORT demonstration projects to be implemented by a variety of PVOs. Assessment teams should consider the option of supporting an association of PVOs which would manage and monitor ORT activities of its member organizations. This involves determining the extent of cooperation among PVOs and locating both formal PVO associations and informal networks.

Within this option, one approach would be to bring together various PVOs which have the potential to provide ORT, whether or not they provide PHC, and to train their managers and trainers. An assessment team might determine the extent to which the PVOs involved in the network have the potential ability, and the will, to provide ORT services as part of their community activities. PRITECH could then sponsor workshops and conferences to develop ORT programs in a variety of PVOs and to encourage sharing of information and resources among PVOs, contingent on good documentation of individual PVO experience as illustrations of ORT effectiveness; PRITECH could also support ORT programs which evolve from these workshops.

E. Encourage Cooperation between PVOs and the Public Sector

Teams should always assess possibilities for increasing communication and collaboration between private organizations and government around ORT policies and projects. In Chad, for example, PRITECH is developing a nationwide ORT program under MOH auspices but administered by Africare, an American PVO. The program focuses on staff training and management of ORT services, bringing the government together with the PVOs which provide most of Chad's rural health services.

F. Integrate ORT into Non-Health Rural Development Programs

Private organizations which are direct providers of health services are not necessarily the only potential promoters of ORT. Assessment teams should consider potential assistance to integrated rural development programs working in such sectors as agriculture, income generation, and education. ORT can be taught to agricultural extension agents, vocational trainers, or school teachers, none of whom see themselves as health workers but all of whom can have a direct effect on child nutrition and health. Their effectiveness in promoting family planning in many countries illustrates that an integrated approach can be an effective vehicle for such innovative health practices as ORT.

8.3 PROBABLE PRINCIPAL ISSUES

8.3.1 Replicability

PVO projects usually have small target areas, a highly motivated staff, and often expatriate technical assistance - advantages which governments often claim cannot easily be replicated. Can such small pilot projects, which

demonstrate ORT cost-effectiveness on a limited scale, be "scaled up," replicated, and expanded to new and different areas? Assessment teams considering joint PRITECH-PVO programs must bear in mind that such replication requires careful documentation of pilot test experiences. Moreover, those findings must be presented accurately and convincingly to skeptical private- or public-sector organizations which might be persuaded to copy or adopt them.

Assessments of PVOs should also consider the PVOs' levels of commitment to replication, with priority given to private organizations which are not only concerned about providing ORT services to their immediate target population, but also want to spread those services to other delivery systems. Often a PVO's commitment to such "spread effects" is the key factor in making them happen.

8.3.2 Sustainability

Assessments should consider local private organizations' potential to sustain themselves with little or no external technical or financial aid. If ORT programs are lodged within self-managed and self-financed health systems, they are more likely to outlive the support of AID or any other international donor.

8.3.3 Institution Building

A major goal for PRITECH is to build the managerial and technical skills of host country individuals and institutions to provide ORT. Assessment teams should keep in mind the importance of this issue in deciding which private organizations to work with. In the mid to long term, the success of ORT in either the private or public sectors will depend on the skills and commitment of local staff, not expatriates. Assessments of private groups, therefore, should consider, in addition to their replicability and sustainability, such elements as:

A. Training

The organization should select nationals as counterparts and train them to replace expatriates as soon as they are qualified.

B. Linkages

The private organization, which is normally quite limited in size and scope, should be working effectively with public agencies as well as other private agencies to maximize its impact. The MOH can learn much about ORT from a non-government group which is unhampered by bureaucracy, but only if that group is effectively linked to government.

C. Participation of Health Consumers

ORT's widespread use ultimately depends on the extent to which it is accepted by families: the individual mothers and fathers who administer it to children. If they have not been successfully convinced and committed to its use - if, for example, they are reluctant to take the time required to spoon

feed ORS as they were taught to do - ORT will never achieve its potential as a central element in the child survival strategy. The most fruitful work will be done with PVOs which have proven competence in health education based soundly on the support and involvement of beneficiaries.

D. Benefit Distribution

Teams need to assess the ability of private groups to reach the poor. Ironically it is often by charging fees for service that private health groups can afford to serve the poor in remote areas better than government, which often promises (but fails to provide) "free" services. To resolve this dilemma, many PVOs charge on a sliding scale in order to serve everyone, including the destitute. Teams should consider the extent and quality of PVOs' assistance to needy families in evaluating their potential for providing ORT to those most likely to need it urgently and at no or low cost.

PART II
THE NON-PROFIT PRIVATE SECTOR - EMPLOYMENT-BASED HEALTH PLANS

8.4 EXPERIENCE TO DATE/LESSONS LEARNED

8.4.1 Summary of PRITECH and Other Relevant Findings

One of the most promising and widespread private-sector initiatives is the employment-based health benefit plan. There is a wide range in both prevalence and coverage of employee benefit schemes in developing countries: Social Security, for example, provides general medical care in most Latin American countries; some Asian, Near East, and North African countries; and very few African countries. Generally, these programs are linked to employment in modern industries (usually of some minimum size), to the exclusion of the traditional agriculture and nonformal sectors. Typically, the services are financed by equal contributions of a small percentage of gross income paid by the employee and the employer, with governments also sometimes contributing. In some Latin American countries, the services are organized by a government ministry specifically for the beneficiaries and are managed more or less independently of Ministry of Health facilities.

Newly initiated social security schemes in developing countries tend toward rather limited government involvement, often in the form of a government mandate that employers of a certain size provide health benefits jointly financed by employer and employee; the government generally plays only a regulatory role, without financing or managerial responsibilities. One example of this type of scheme is the Egyptian Health Insurance Organization (HIO), which has grown rapidly to cover 20% of the population in 1980, compared to 3% coverage in 1971.

As the economic growth in developing countries leads to a larger educated middle class, there will be an acceleration of health benefits made available through places of employment. These benefits provide employees an alternative to the use of public facilities, with the likely dual effect of stimulating growth of the private medical sector and moderating pressure on public facilities.

8.5 PROBABLE PRINCIPAL ISSUES

8.5.1 Coverage

It should not be assumed by assessment teams that members of an employee benefit plan are fully covered for all health services, particularly in regard to diarrheal disease. Some employee health plans which cover large eligible population groups have inadequate arrangements for ensuring timely treatment of diarrhea; without examining the adequacy of existing systems for providing eligibles with ORS and general ORT services, service targets cannot be readily established. For those plans which insure the purchase of health services in the private marketplace, coverage can be determined only by thoroughly surveying the prevalence of ORT practices in the "unorganized" sector: fee-for-service private practice physicians, private hospitals, pharmacists, and traditional practitioners.

8.5.2 Private Cost Incentives on Behalf of Public Policy Goals

Private organizations in market-based economies which contract to provide health services to a defined group of individuals have strong incentives to become self-financing by minimizing costs and maximizing profits. Whether the organization is an employer providing direct services, a prepaid health care plan, or any other model, it is important to recognize that improved health status among members has great potential for keeping medical care costs down and profits up. Clearly the effective use of ORT could play a critical part in achieving this purpose; if the planners recognize and capitalize on this potential, both the members and the organization will benefit.

The most difficult problem for the organizations maintaining these plans is to provide the required benefits at a level that can be realistically financed by employer and employee. Insurance schemes are likely to be willing to participate in such programs as ORT because such efforts will help to keep ever-rising costs down.

8.5.3 Organizational Structure and Management

The involvement of an employment-based self-financing primary health care system in ORT programs must give early consideration to such questions as how, where, and by whom the relevant medical and administrative activities will be carried out; the provision of adequate staff; and the avoidance of top-heavy project administration, with its related costs. There must also be a determination of how financial, administrative, and supervisory roles will be allocated; how and by whom on-going training of administrators and providers will be provided; and what incentives will be used to keep qualified staff in the program.

8.5.4 Financial Development and Planning

The long-term financial viability of any self-financing mechanism depends on the capacity of the delivery system to provide desired services at low cost and the ability of the target population to generate enough resources to pay for the services. To meet these conditions in planning an ORT component, there must be sufficient data on household health expenditures and

morbidity/utilization patterns to identify appropriate and acceptable pricing policies. Service delivery costs must accurately reflect the administrative costs of the system, the impact of inflation, and the need for a cash reserve to support investment requirements and future growth. Given all these considerations, cost-containing mechanisms must be clearly identified. Financial planning must, therefore, as much as possible achieve and sustain a delicate balance between accurate reflection of costs and willingness of employers and members to pay the premium.

PART III
THE COMMERCIAL SECTOR

8.6 EXPERIENCE TO DATE/LESSONS LEARNED

8.6.1 Summary of PRITECH and Other Relevant Findings

The commercial sector can be broadly defined to encompass all profit-making entities within the health care delivery system: some insurance programs; hospitals and clinics that are run neither by the government nor by PVOs; a range of private health practitioners - traditional practitioners of many kinds, including herbalists and TBAs, as well as physicians and pharmacists, and pharmaceutical manufacturing firms.

Although ORT assessment teams have looked at some aspects of the commercial sector, particularly as they relate to government health activities, there has not generally been the time or wherewithal to exhaustively explore all the varied, disparate, and sometimes elusive components of this sector. However, a considerable amount of information on commercial-sector involvement has been garnered over years of technical assistance; a full presentation of this information and its implications is threaded through relevant chapters of the Manual and briefly summarized here.

The commercial sector is potentially a key factor in virtually every aspect of the assessment and planning of ORT programs. Yet, in formulating policies, laws, and regulations, (Chapter 4), few countries have incorporated the non-governmental systems into their policy statements, or provided regulation, accreditation, and control for the private practitioners who are often providing the majority of medical care. There is a similar lack of policies and regulations pertaining to ORS formulation, manufacture and supply, distribution, and the pricing and packaging of multiple products. Similarly, Chapters 5 and 7 reveal that few countries have included explicit roles for the commercial sector in the strategic and operational planning or the organization and management of programs and delivery systems for all components of ORT programs. As stated in Chapter 6, assessment teams have thus far not generally analyzed program financing, in either the public or commercial sector, because of a combination of lack of data, lack of sophisticated skills in financial analysis on assessment teams, and time limitations. It is, however, generally acknowledged that, with the large amount of private spending for health care in most developing countries, the commercial sector constitutes a substantive funding source to be tapped for the initiation and maintenance of ORT programs.

Chapters 9 and 12 explore the potential role of the commercial sector in communications on behalf of ORT programs, with particular emphasis on marketing and sales of ORS. In particular, assessments have revealed that the traditional approach to marketing is public-sector dominated, but that many countries have adopted the opposite approach, turning to the commercial sector to market a product that is sold with very limited governmental involvement. The alternative advocated by PRITECH is a blend of these two approaches: MOH coordination of programs; inclusion of all health providers in both sectors; and involvement of the commercial sector in the production, distribution, and marketing of ORS whenever such involvement will enhance the acceptance and use of ORT among families.

The actual and potential participation of the commercial sector is highly relevant to local production of ORS (Chapter 10). Assessment teams have found that the major considerations in the decision to undertake local production pertain to both sectors; they have looked closely at the commercial implications of critical questions about the technical and economic feasibility of local production; the need for increased production; the potential for reducing the cost of ORS; and desired changes in formula, presentation, or packaging. And, in particular, they have considered the incentives and contractual arrangements that are likely to encourage commercial production and marketing of ORS, or sale to the public sector at an acceptably low price.

No clear across-the-board recommendation has been made; the decision about commercial production in a given country hinges on the responses to the questions above. In the majority of cases, either the private commercial sector is clearly more experienced, capable, and financially viable, or the public sector has such control over the process that there is no present opportunity for commercial involvement in the process. In the few instances where there is equal capacity for production in both public and commercial sectors, a key criterion is usually the ability of the government to control the price of ORS privately produced.

In the case of supply management (Chapter 11), the assessment teams have considered wholesale and retail outlets of any kind that could serve as channels for distribution of ORS, either as an over-the-counter drug or as a food product. Commercial distribution through these outlets demands careful tracking of inventory levels, quantities shipped, and facilities experiencing stockouts if there are to be supplies adequate for the needs of the population. This implies that information systems (Chapter 13) pertain to the commercial as well as the public sector; a combination of wholesale figures and measures of consumer access is usually a fair indicator of the reach of commercial ORS distribution.

8.6.2 Summary of Constraints

A. Legal and Regulatory Constraints

Provision of health care to citizens by commercial-sector entities is naturally subject to the requirements and limitations imposed by the country's political/legal system on any such relationship or transaction. Although these are obviously unique to each country, there are some general regulatory considerations that apply wherever distribution of ORS involves

private-sector marketing and sale. One such factor is the licensing and classification of ORS; this can virtually determine which distribution networks can be used. For example, it may be desirable to have ORS distributed as a food item, through the broad network of food shops, tea stalls, or neighborhood vendors. The frequent classification of ORS as a pharmaceutical item can result in restriction of distribution to licensed pharmacies, eliminating an extremely effective distribution possibility. This issue is more fully explored in Chapter 4.

B. Organizational Constraints

Assessment of the potential involvement of a commercial group in any ORT program needs to be sensitive to the constraints that are imposed by the group's internal organizational goals and structure, its constituencies and mandates, and its ongoing external relationships with other groups, both public and private.

The profit-making nature of a cooperating commercial organization is, in general, a less important consideration than how the organization is governed and controlled. If it can successfully fulfill a well-defined role in some aspect of an ORT program, the fact that it is profit-making should not be of central relevance. For example, it would make little sense to support a government effort to start up a production facility for the manufacture of ORS if a private company has already begun such an effort and has shown a capability for acceptable quality production. Too often, mistrust and lack of understanding of the potential of commercial organizations hampers cooperative efforts.

C. Financial Constraints

The assessment of financial constraints on commercial-sector involvement in ORT programming is important mainly from the point of view of the potential beneficiaries. Since a prime motivation for public/commercial cooperation is the shrinking public resource base available for health services, it is inevitable that beneficiaries as a group will have to pay more for such services than in the past, even if payments are not in the form of out-of-pocket user charges. While any assessment should carefully calculate the potential impact of such a shift, potential costs should be weighed against potential benefits. Profit-making may well be acceptable if there is an associated net increase in social welfare, that is to say, improved efficiency in producing and delivering services to a wider group than might otherwise have been served. In many ORT programs, there is a lack of complete understanding of this balance and a consequent unwillingness to consider initiatives that involve commercial groups reaping gain. Chapter 6 offers a more detailed discussion of these and related issues.

8.6.3 Summary of Options

A. In planning ORT programs, choose among traditional (public-sector), commercial, and mixed strategies.

PRITECH generally advocates a mixed public/commercial strategy, MOH-coordinated and family-centered. This option emphasizes public education

and relies on mass media, health providers, and non-health providers in targeted communities. It includes all major systems of care, encompasses both home solutions and packets, and is demand-creating (Chapter 5).

B. Select appropriate communication channels to achieve maximum impact.

Experience to date strongly suggests the integrated use of three channels in marketing ORT: radio, person-to-person contact from influential providers of care and information, and printed and graphic materials. Each of these channels may well be partly based in the commercial advertising or broadcasting sectors in a given country; the recommended integrated approach will call for determining the appropriate mix of public and commercial institutions (Chapters 9 and 12).

C. If commercial local production of ORS is determined to be desirable and feasible, choose appropriate inducements to encourage the participation of the commercial sector.

This option begins with the presentation of a reasonably accurate projection of demand for ORS and may include such strategies as donor financing of equipment, guaranteed government procurement, waiver of import duties, and public promotion of ORS, to name only a few (Chapter 10).

8.7 PROBABLE PRINCIPAL ISSUES

8.7.1 Acknowledgment of Current Role of Commercial Health Care Providers

The predominance of non-government sources of health care in most countries is verified by numerous studies; these consistently demonstrate that most families purchase services and drugs from neighbors, traditional practitioners, pharmacists, shopkeepers, private doctors, and other commercial sources. Given the strain on public-sector health budgets in virtually every country, this trend is likely to continue and must be considered in realistically assessing the future involvement of the commercial sector. Such assessments should be based on two kinds of information. The first is the types of facilities and providers that charge fees, what they charge for, and the amount they charge. The second is the ability and willingness of consumers to pay, based on consumer expenditure surveys (Chapters 5 and 6).

8.7.2 Identification and Use of Effective Approaches to Commercial-Sector Involvement

The most promising approaches include: new policies, laws, or regulations that can facilitate private-sector participation; incentives to investment; joint private/public financing of new facilities; subsidies of retail sales of ORS; joint participation in health communications activities; and joint participation in distribution and delivery of ORS.

8.7.3 Inter-Sectoral Cooperation

Commercial-sector initiatives can be expected to involve new ideas and new methods in programming development assistance. In some cases, government officials may be more than receptive to innovative approaches to ORT,

especially if they can be undertaken without significant new government outlays. In other cases, the receptivity to innovative departures in public/private cooperation may be quite limited. Whatever the situation, there are likely to be substantial benefits from an extended dialogue between government and private groups, if the task is approached with openness to innovative programs.

8.7.4 Evaluation of Mass Communication and Marketing Efforts

In all mass education and marketing activities, it is extremely important to take into account the knowledge, attitudes, and practices of the targeted audience; to pretest educational and marketing materials; and to monitor the effectiveness of communications and marketing efforts in meeting program objectives. In some instances, the capacity to implement this level of research may be most developed within such commercial organizations as market research firms; the willingness to harness this capacity may be a critical factor in the success of a mass communications or marketing endeavor. (Chapters 9 and 12).

8.7.5 Role of the Commercial Sector in Local Production of ORS

The determination of commercial participation in local production in any given country should take into account several critical factors: the existence of public- and commercial-sector pharmaceutical production facilities; the relative quality of those facilities in terms of experience, technically-skilled personnel, available space and equipment; the capacity of the facilities to meet required standards of production and packaging; and the ability of government to exert some control over the pricing of ORS in the commercial sector (Chapter 10).

8.7.6 Sale of ORS in the Commercial Sector

It is generally acknowledged that achieving the broadest possible coverage with ORS requires distribution through public, private non-profit, and private commercial sectors. In considering commercial distribution, the focus here is on the feasibility of distributing ORS through the existing wholesale/retail network (Chapter 11). Determining this feasibility requires:

A. Identification of suitable channels for distribution, including retail pharmacies, shops, and other enterprises through which consumer products are sold. The choice of pharmacies or retail shops as the main channels of distribution should consider the relative advantages and disadvantages of each (Chapter 12), as well as the extent to which these outlets are used by the less affluent members of the population and especially by women;

B. Estimation of the proportion of the population covered by these outlets, in respect to both numbers and geographic distribution;

C. Determination of the existence or potential for creation of incentives (principally wholesale and retail profits), to ensure reliable and extensive distribution through these outlets.

D. Resources available for mass communication and commercial advertising, to create product demand and foster the high turnover of sales that will allow wholesalers and retailers to make an appropriate profit.

8.7.7 Training and Education of Commercial-Sector Health Care Providers

If ORT is to be extended through involvement of the commercial sector, the appropriate motivation and skills must be provided and maintained among health care providers practicing in this sector at all levels. This will involve not only a considerable investment of resources but, in the case of physicians and pharmacists, a substantive restructuring of the curriculum. There must be a demonstrated commitment by the government to train traditional care-givers in ORT, and an equal commitment by the medical and pharmacy associations to foster the necessary changes in the professional education of doctors and pharmacists (Chapters 14 and 15).

PRIVATE-SECTOR DELIVERY SYSTEMS

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 8.

PART I: PVOs

1. What is the size and composition of the population served by PVOs?

2. What are the current government policies, attitudes, and practices regarding interaction with PVOs?

3. Is there adequate documentation of pilot test results to facilitate scaling-up, replication, and expansion?

4. Is the presentation of these results accurate and convincing enough to persuade appropriate organizations to replicate or adapt the project?

5. Is the PVO in question committed to replication?

6. What is the potential of the PVO to sustain the ORT project after donor assistance ends?

7. Is the PVO selecting nationals as counterparts and training them to replace expatriates?

8. Is the PVO working effectively with other private and public agencies to maximize its impact?

9. Does the PVO have proven competence in health education and outreach, based on the support and involvement of its beneficiaries?

10. What is the extent and quality of the PVO's assistance to the neediest families?

PART II: EMPLOYMENT-BASED HEALTH PLANS

1. Are the members of a given employee benefit plan actually covered for treatment of diarrheal disease, specifically for ORS and ORT services?

2. Is the management of the health care plan aware of the positive effect of improved health status on medical care costs and profits? Do they see this relationship specifically as it pertains to ORT?

3. Has a given employment-based plan duly considered its administrative needs and structure? Has it allocated financial, administrative, and supervisory roles; provided for on-going training; and designed incentives to maintain qualified staff?

4. Have pricing policies been realistically determined in light of the willingness and ability of the target population to pay? Does the price structure accurately reflect household health expenditure data and morbidity/utilization patterns? Have cost-containing mechanisms been clearly identified?

PART III: THE COMMERCIAL SECTOR

1. Has the future involvement of the commercial sector in ORT been justified by assessment of the types of facilities and providers that currently charge for care, with accurate information on what they charge and for what services? By consumer surveys to ascertain the willingness and ability of the target population to pay for ORT?

2. In considering commercial-sector involvement, has due attention been paid to such promising approaches as new policies, laws, and regulations; incentives to investment; joint private/public financing of new facilities; subsidies of retail sales of ORS; joint participation in health communications activities; and joint participation in distribution and delivery of ORS?

3. Has a dialogue between government and private groups been begun as a means to foster public/private cooperation and increase governmental receptivity to innovative approaches to ORT? Is there provision for regularly maintaining such a dialogue over the long term?

4. To what extent are mass education and marketing efforts relying on KAP surveys, pretests of materials, and monitoring of program effectiveness in meeting objectives? Is there greater capacity in the commercial sector to carry out such evaluations than in the public sector? If so, is there some willingness to turn to the commercial sector to do the work?

5. In considering the potential commercial involvement in local production of ORS, is due attention being paid to such critical factors as the existence and quality of public- and commercial-sector pharmaceutical production facilities; the capacity of the facilities to meet required standards; and the ability of the government to exert some control over the pricing of ORS in the commercial sector?

6. Is the feasibility of commercial sale of ORS being determined on the basis of identification of suitable channels for sale and the relative advantages of the different outlets; the proportion of the population covered by the various kinds of outlets; the existence or potential for incentives to sellers of ORS; the resources available for mass communication and advertising?

7. Is there provision for training and retraining commercial-sector health providers at all levels in the proper use of ORT? Is there a commitment by the government to train traditional care-givers? By the professional faculties and medical and pharmacy associations to re-shape professional curricula?

CHAPTER 9: COMMUNICATIONS IN SUPPORT OF ORT PROGRAMS

Mark Rasmuson

9.1 INTRODUCTION

The overall goal of a communications component in an ORT program is to get more people to use, use correctly, and continue to use, oral rehydration therapy. While this goal encompasses both providers and users of ORT, users or consumers are the pre-eminent concern of a communications program. Indeed, it may be said that the most important overall role for communications in an ORT program is consumer advocacy - understanding and then addressing the concerns and needs of consumers in the effort to increase their use of ORT products and services.

Within the consumer advocacy role there are three clear and important tasks for communications in an ORT program: publicizing, motivating, and teaching. To publicize or inform is the task most commonly associated with project communications support. Communications are essential in informing an audience that a new ORT project or service is under way and lending legitimacy or urgency to it. Communications can also assist the rapid expansion of program coverage by, for example, advertising a new ORS product or telling people where they can obtain a new service.

But communications can also be designed to motivate people to participate in a new program or adopt a new practice, e.g., to try ORT and then to continue to use it, through incentives, social reinforcement, or intensive promotion. The strategies of social marketing, national mobilization, and community participation all serve this motivational function.

A communications program can also teach people specific new skills, such as the correct preparation and administration of an ORS solution. The fields of instructional design, social learning, and behavioral medicine have made important contributions in recent years to the capacity of health communications to make the training of health personnel and the education of the public in ORT more effective.

9.2 EXPERIENCE TO DATE/LESSONS LEARNED

9.2.1 Summary of PRITECH and Other Relevant Findings

Communications sector assessments have been part of most of the PRITECH strategy assessments, reflecting a growing awareness among AID, other international donors, and host-country officials of an important role for health communications and social marketing in the development and support of ORT programs. A communications consultant has been specifically requested by the USAID Mission and provided by PRITECH in Peru, Bolivia, Central America (Guatemala: ROCAP/INCAP), Mexico, Burma, Pakistan, the Philippines,

Indonesia, Bangladesh, India, Morocco, Chad. Niger, Mali, Nigeria, and Djibouti. In addition, PRITECH consultants have reviewed the communications experiences of a number of other countries with ORT programs in which PRITECH has not yet been directly involved, such as Egypt, Honduras, Nicaragua, Swaziland, and The Gambia.

While the range of communications activities and opportunities obviously varies considerably from country to country, PRITECH's teams found a small number of countries, including Egypt, Bangladesh, Honduras, Nicaragua, and The Gambia, with well-planned, large-scale communications components as part of their ORT programs. Experience in these countries demonstrates that communications can not only facilitate increased awareness and understanding of a project but can also help generate measurable gains in ORT use and reductions in infant mortality.

In the National Control of Diarrheal Disease Project in Egypt, an aggressive social marketing campaign, supported by face-to-face educational efforts by health personnel and pharmacists, increased the reported use of ORT from 1% to 69% in less than a year. One of the Project's field trials demonstrated a 59% reduction in diarrhea-related mortality with the use of ORT.

The Oral Therapy Extension Program (OTEP) implemented in Bangladesh by the Bangladesh Rural Advancement Committee (BRAC) has since 1980 taught 2.5 million mothers about ORT through a face-to-face teaching strategy. An evaluation showed that 90% of the mothers taught were able to mix a safe and effective ORS solution several months after their initial instruction.

The Honduras ORT program used three integrated communications channels - radio, health workers, and graphic materials - to promote the correct use of Litrosol, the local ORS packet. After one year, 48% of women reported having used Litrosol at least once, and within 18 months diarrhea-related mortality in children under 2 dropped by 40%.

Nicaragua's Diarrheal Disease Control Project began in 1979. It was an integral component of the massive national social mobilization initiated by the Sandinista government which included a national literacy crusade. This general effort was largely carried out through existing groups - community, students, workers, etc. - and relied heavily on literacy workers as a source of communication. In three years' time, the project achieved 43% coverage of under-6 cases of diarrhea, and diarrhea fell from first to fifth place as a cause of in-hospital mortality.

In The Gambia, a national contest which involved thousands of village women in local ORS mixing trials was the culmination of an intensive eight-month campaign to teach mothers how to make an effective sugar-salt ORS solution. By the end of the campaign, 66% of mothers knew the correct sugar-salt solution formula, and 47% reported having used it.

These countries employed quite different communications strategies. The Honduras and Egypt programs used both mass media and face-to-face communications channels in an integrated fashion, and Egypt additionally made extensive use of ORS marketing through the private pharmaceutical sector. The Gambia also used multiple integrated channels but made the centerpiece of the promotional campaign a prominent national event which rewarded mothers

for correct ORT practice. The BRAC program in Bangladesh has been predominately a face-to-face teaching program, with a unique payment incentive system for its teachers. Nicaragua's strategy was one of national revolutionary mobilization.

Despite their differences, these successful ORT communications programs share some important fundamental characteristics:

A. They were marked by strong audience orientation.

Each of the projects went to great lengths to understand and involve the audience, primarily rural mothers, in planning and implementation. Mothers' beliefs and practices were thoroughly researched and incorporated into the development of messages. Community participation was actively encouraged, one common example being the deployment of community volunteers to teach about ORT in village households. This attention to the attitudes, needs, and desires of the audience is perhaps the single most important perspective that communication planning brings to an ORT program.

B. They focused on a few actionable messages.

In order to achieve salience in the minds of the audience and to maximize learning impact, the projects focused on a carefully selected set of objectives and messages, such as the proper mixture and administration of an ORS solution. Prior research determined that the audience had the means to act on the messages, ensuring, for example, that they had sugar and salt available to mix a promoted sugar-salt solution.

C. They employed intensive promotion.

The projects made intensive use of promotional activities to motivate participation in and adoption of new behaviors. These activities, including mass media, face-to-face communication, or both, ranged from house-to-house visits by large cadres of extension workers, as in the BRAC program in Bangladesh, to a national contest in The Gambia offering prizes to rural women who learned how to correctly make a rehydration solution.

D. They were part of a comprehensive program.

The communications component of each of these projects was precisely that: one component of a larger program that also encompassed extensive training of health personnel, an adequate ORS supply, and a well-managed distribution system, all supported by a plan and an adequate budget.

In addition, several of the successful ORT communications programs included:

- o extensive use of formative evaluation and monitoring;
- o integration of face-to-face and mass media channels;
- o systematic design and testing of educational materials.

Apart from the few successful ORT communications programs cited above, little well-executed communication activity of national scope and impact has been carried out in support of ORT programs in the countries PRITECH has assessed to date. This is a reflection in part of the relative newness of ORT programming to the international health agenda and, in part, of the weakness, inexperience, or traditionalism of communications institutions in many countries. Even where the planning and implementation of an ORT program have progressed significantly, communications support has tended to be limited to the training of health personnel and the ad hoc development of a few posters or radio programs oriented towards literate, urban audiences. More will be said about this important institutional constraint on ORT communications in the section which follows.

9.2.2 Summary of Constraints

Even in countries with the requisite resources and skills, it may be difficult to mobilize and apply them in an effective health communications program. Many well-trained health officals, including health educators, continue to hold very traditional views of health education. They may be resistant to the systematic use of the mass media, viewing health education in terms of the solitary health worker who has had only a few weeks of health education training and is armed only with a flipchart, giving talks to small groups of mothers at MCH clinics. Or, they may want to undertake a new campaign every few months, not appreciating that sustained, repeated messages can have a lasting impact.

Aside from these general considerations, the following are among the most important constraints that may hinder a country's rapid expansion of effective ORT communication activity:

A. Few, Weak, or Inexperienced Communications Institutions

In the poorest developing countries, there is a serious scarcity of the skills necessary to implement effective communications programs - program planning and management, instructional broadcasting, graphic design, research, and evaluation - as well as of the material resources needed, e.g., printing facilities, recording equipment, travel allowances, etc. Poorly-paid and ill-trained staff in the Ministries of Information or Health may be difficult to motivate to higher performance. In countries where some individuals have the requisite skills, they are often employed in the private sector - in advertising or marketing firms, for example - and it may be difficult to tap them due to a lack of understanding, trust, and avenues for collaboration between the public and private sectors. The problem of weak communication institutions in African countries, for example, is compounded by the large number of development ministries and other organizations all competing for a severely limited communication resource: time on the government radio service.

B. Intractable Traditional Beliefs and Practices

This may be a problem in reaching both the primary audience (mothers and other caretakers of children) and secondary audiences (particularly health service providers) of an ORT communications program. Traditional beliefs about the causes of diarrhea and how to treat it may be irrational and even

deleterious but culturally meaningful and resistant to change. Similarly, physicians and other health workers may cling to outmoded drug or intravenous therapy in treating diarrhea, either through lack of information or out of economic and professional self-interest. Finally, both client and deliverer may hold tenacious, essentially negative views of each other: deliverers may see clients as ignorant and recalcitrant; clients may believe little in public-sector ability or private-sector disposition to help them.

C. Regional or Ethnic Diversity

In countries with tremendous variety of terrain and population, traditional beliefs and practices are likely to be more firmly entrenched than where there is greater homogeneity. In a very populous and ethnically diverse country such as Nigeria, for example, it is impossible to design a single national educational program for ORT. Regional or state plans must be made which allow for ethnic variations in diarrhea beliefs and practices and for differences in resources available for implementing educational programs. Nigerian health planners, for example, were unable to identify a litre container (such as a Coke bottle) which was universally available throughout the country and could be recommended as a measure of water in mixing ORS packets. This obviously limited the specificity with which national ORT messages could be formulated and compounded the possibilities for confusing ORS-mixing messages in adjoining states.

D. Inherent Characteristics of ORT

There are some features of ORT as a health technology or practice which may make it difficult for a communicator to promote and a consumer to adopt. Among these characteristics, one of the most critical is the lack of immediate benefits of ORT to the child who receives it. For example, the primary concern of most mothers is to stop the diarrhea of an ill child, rather than to prevent dehydration, whose signs and dangers they may be completely unaware of. They may be resistant to a therapy whose benefits do not seem relevant to the situation that worries them most.

E. Costs

A well-planned, executed, and monitored communications program that provides substantial gains in learning, trial, and adoption of new behavior will require substantial resources. If a country has a private broadcast sector with extensive effective coverage, the purchase of broadcast time will probably be a communication program's highest cost. Other significant costs will include training for large numbers of health workers; production and distribution of print materials; technical assistance to train health educators and broadcasters in campaign planning; and, depending upon the resource scarcity of the country, basic operating needs, ranging from recording tapes to travel allowances for local staff.

9.2.3. Summary of Options

A. Audience: Demand Creation and/or Supply Reinforcement?

In most countries, the primary audience for an ORT educational program will ultimately be mothers and other caretakers of children under 5, that is,

those who must be taught how to recognize the signs of diarrhea and dehydration and what appropriate home management actions to take. Important secondary audiences will include health service providers (physicians, nurses, community health workers, and pharmacists), as well as extension workers, teachers, schoolchildren, and others.

In some countries, the soundest strategic option for ORT communication support may be to focus initially on the secondary audience of health service providers. This option would be dictated by a situation where there is substantial resistance to ORT within the medical community, where Ministry policy for home-based therapy has not been established, or where the supply of ORT products or services is still weak.

A clearly-articulated national ORT policy, adequately-trained medical staff, and reliable ORS supply and distribution systems should, in fact, be considered prerequisites to the launching of an ambitious public communications program. A premature communications program, particularly one designed to stimulate consumer demand, can have serious negative consequences for a national health program if it is not sufficiently prepared for the demand created.

There are, however, some proper roles for both public and professional communication about ORT even before a national program is launched. These include raising awareness of the public about the seriousness of diarrhea as a disease, or among medical workers, of the legitimacy of oral rehydration therapy. But experience has shown (and PRITECH's Technical Advisory Group has strongly recommended) that, before undertaking any major promotional activity designed to increase consumer demand, it is essential to ensure that the critical elements of a comprehensive ORT program named above be firmly in place.

B. Channels: Public and/or Private?

ORT communications experience to date has strongly suggested the integrated use of three communication systems in order to achieve maximum impact:

- o radio, the most effective medium for achieving extensive informational coverage in most countries;
- o health workers and other influential providers of care and information, the channel most likely to give credibility to ORT and assure its acceptance as a new health practice;
- o print and graphic materials, such as an ORS packet label or a simple pictorial flyer on mixing ORS, given to every mother, to assure that the educational message is timely and that the advice a mother needs is at hand when she needs it.

There is wide variation in the capacity to make use of these communications systems both between and within the geographic regions served by PRITECH. But every country, between the public and the private sectors, will have some capability in each of these areas; one of the main tasks of the PRITECH communications assessment is to identify where these capabilities lie and recommend an appropriate mix of public- and private-sector institutions to use in a given country.

Asia and Latin America, for example, have much more developed and sophisticated private communications sectors than Africa (e.g., commercial radio, advertising companies, market research firms), which offer opportunities for more professionally produced and disseminated messages. On the other hand, the centralized communications system in Africa, where the single government radio/TV station or network is virtually ubiquitous, offers extremely high audience coverage at very low cost (in fact, broadcast time is often provided free to Ministry of Health programs).

In a number of countries, primarily in Africa and Latin America, private voluntary organizations (PVOs) such as CARE, Save the Children, Africare, Catholic Relief Services, and others, have longstanding program infrastructures and experiences which afford opportunities to supplement weak government health education services. In Bolivia, for example, the Catholic organization, Caritas, will carry out an ORT educational program through its extensive system of mothers' clubs, with technical assistance from PRITECH and instructional broadcast support provided by three of the country's Catholic radio schools.

Whatever the public/private mix, communications efforts on behalf of ORT in any country will almost surely involve at least one public-sector institution: the Ministry of Health. The MOH will generally serve both to promote ORT and to provide training in its use among health service providers, as well as to use the health system as an important channel of public education.

In some of the more developed countries, USAID and PRITECH are encouraging collaboration between the Ministry of Health ORT program and private-sector institutions like pharmaceutical companies, which often have extensive national distribution systems and valuable expertise. In Pakistan, a country with a large private pharmaceutical sector, the PRITECH communications assessment recommended that the MOH contract with a local advertising company to conduct a generic public promotional campaign on ORT, while encouraging the pharmaceutical companies to actively advertise their own individual ORS products.

C. Messages: ORT and What Else?

Identification of priority ORT educational messages in any given country is the outcome of a number of steps in the communications planning process, including, among others, assessment of training needs among health workers, investigation of existing beliefs and practices among mothers, and behavioral analysis of possible target behaviors to determine which are most amenable to change.

The key strategic decisions affecting public education messages in an ORT campaign, however, are made at the level of national policy and include the following:

- What is the specific product and/or practice to be promoted?
- What recommendations will be given for the home treatment of diarrhea?

- Will the health system provide ORS packets, recommend their purchase from a commercial source, or teach mothers how to mix and administer a simple home remedy?

These options have very different implications for a communications support strategy. A packet with a name and a logo can be marketed in a straightforward way, with promotion focusing on where to obtain a packet and how much water to mix it in. It is a considerably more complicated instructional task to teach mothers how to correctly mix and administer a sugar-salt solution, using containers and measures found in the home.

- What will Ministry policy be regarding dietary management of diarrhea?

Any dietary recommendations given to mothers will require careful formulation, based on research, to ensure that recommended foods are available to mothers at a reasonable cost. If not, these and other messages will simply not be credible.

- What other categories of messages should be communicated to the public audience?

What, if anything, for example, should an ORT program say to mothers about existing treatment practices which are detrimental but often resistant to change, such as purging? What should be said about infant formulas? At what point in the continuum of diarrheal symptoms should mothers be encouraged to seek medical care? Guidelines for message development in these areas should be clearly spelled out in the Ministry's diarrheal disease control policy and plan. Whatever the specific guidelines, in every country the proper mixture and administration of a rehydration solution, dietary management, and referral for a dehydrated child should be among the priority messages.

D. Change Strategies: What Mix?

Underlying all the options named above with respect to audiences, channels, and messages is the very important choice that must be made in ORT communications planning: what overall change strategy or strategies will be followed? An educational campaign can make an emotional appeal to audiences to adopt ORT, or simply present the factual, scientific basis for ORT in a straightforward way. A marketing approach which offers some material incentive to consumers to try ORT may be highly effective in some situations and politically and culturally unacceptable in others. As suggested by Figure 1, choices of change strategies will not only set the tone of a communications campaign but will have important implications for overall program design as well. Most of the successful ORT communications programs identified earlier - Egypt, Bangladesh, Honduras, etc. - used a combination of these change strategies, which may well have been another important reason for their success.

FIGURE 1
TYPES OF CHANGE STRATEGIES

Strategy	Method	Example
Power	Sanction/Force	Ban Anti-Diarrheals
Logic	Facts	Teach Dehydration Concept
Appeal	Emotion	Tonic to Restore Appetite of Sick Child
Incentive	Reward	Distributive Attractive Plastic Measuring Cup
Facilitation	Remove Obstacles	Package Salts in Convenient Glass-Size Packets

9.3 PROBABLE PRINCIPAL ISSUES

The key issues for ORT communications planning which should be investigated and addressed in a strategy assessment are, in part, a recapitulation of issues raised above in the sections on "Constraints" and "Strategic Options." The Assessment Checklist which follows this background paper is intended to be used to explore these issues in greater depth.

9.3.1 Policy Guidelines for Communications Planning

The issue here is simply whether or not there is a diarrheal disease control policy and plan in existence. Communications planning will be based on this policy and on the treatment norms outlined for home management of diarrhea and for treatment at various levels in the health system. If there is an established ORT policy, it will help to determine appropriate roles and clarify educational objectives for communications support.

9.3.2 Capability of Current ORT Program

The extent to which program implementation has proceeded and the strength and scope of existing ORT clinical services are key issues here, as is the current stock of ORS packets and the number in the pipeline. The underlying issue is, of course, whether the existing ORT program can sustain the increased demand for services that can be anticipated from a promotional campaign.

9.3.3 Knowledge and Acceptance of ORT in the Health Community

Careful attention should be paid to ascertaining the prevailing treatment norms for diarrhea among medical practitioners and identifying pockets of strong resistance to ORT among all health providers. Given lack of awareness and resistance, the priority needs for re-orienting and training members of the health community must be determined.

9.3.4 Diarrhea-Related KAP of Primary Audience

Communications strategies must respond to the existing knowledge, attitudes, and practices (KAP) related to diarrhea, among mothers and other primary audiences. The relevant KAP includes beliefs about the causes of diarrhea; traditional treatments; the existence or absence of concepts and words for dehydration; and the presence or absence of traditional practices which are conceptually consistent with ORT (giving teas) or are antithetical to it (purging).

9.3.5 Communications Networks

The principal issue here is the nature of the communications system in the country. Communication planners must inventory the number and types of available mass media, both public and private, as well as other public, private voluntary, and private commercial organizations or systems which could be used as educational channels. Patterns of radio ownership and listenership and national literacy rates must be thoroughly understood; they are important factors that influence which media, both modern and traditional, rural and urban people use and find credible. And finally, the investigation of the communications system must take into account the interpersonal networks of communication and influence, civic and religious leaders, and other influential members of the community.

9.3.6 Communications Planning and Production Capabilities

Here one must consider the experience and capability, or potential capability, that exist locally in either the public or private sector, including donor agencies, in the following areas vital to an effective ORT communications program:

- o program design and planning (message development, instructional design, broadcast scheduling, etc.);
- o radio program production;
- o graphic design and production;
- o training;
- o distribution of promotional materials.

9.3.7 Research and Evaluation

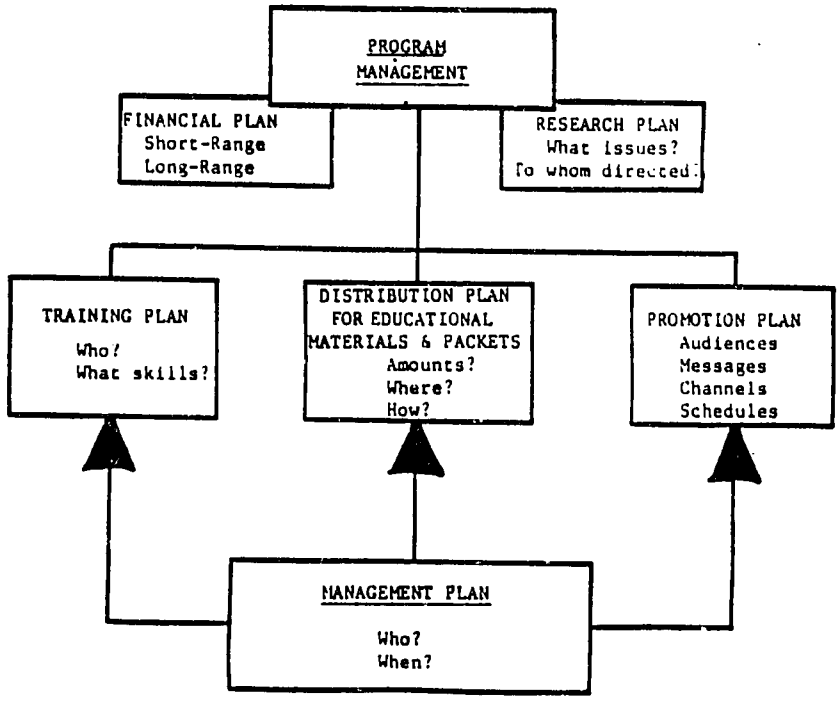
A research and evaluation capability is essential to the successful implementation of a communications project. Investigation of audience knowledge, beliefs, and practices prior to the start of a program, followed by systematic pretesting of educational materials, help ensure that messages are relevant and culturally appropriate. Project monitoring and summative evaluation indicate progress towards objectives and ultimate project impact. An ORT communications assessment must identify what expertise exists locally to serve this important function. It may be found in the Ministry of Health's education or epidemiology units or in a research unit in the Ministry of Information. but in many developing countries this expertise may

be found only in the private sector - in university faculties or market research firms - or may have to be provided through outside technical assistance.

9.3.8 Communications Management

A thorough assessment should identify institutions or individuals which could effectively manage a national ORT communications program requiring close coordination among several government ministries. This is a full-time task which requires strong planning and management skills, as well as a solid understanding of education program design and media planning. Figure 2 indicates five areas of communications program management that must be addressed, preferably through the development of a comprehensive management plan. This role would ideally be filled by a senior officer in the Ministry of Health with a background in education, working closely with outside research, marketing, and broadcasting agencies (both public and private), and with an intersectoral coordinating committee for diarrheal disease control. In many cases it is a job which will require some outside technical assistance.

FIGURE 2
ELEMENTS OF COMMUNICATIONS PROGRAM MANAGEMENT



9.3.9 Cost

The cost of all the strategic options discussed earlier must be carefully considered before appropriate choices can be made. The costs of an ORT communications program will probably include, at a minimum, broadcast time (if not provided by the government), printing, direct education of health providers, and long-term technical assistance.

COMMUNICATIONS

ASSESSMENT CHECKLIST

The following guestions emerge from the issues identified in Chapter 9. A more detailed checklist for program planning is attached as Annex I.

1. Is there a diarrheal disease control (CCD) policy in existence?

2. Is there a CDD plan?

3. Are there treatment norms for management of diarrhea at various levels in the health system?

4. At what stage is program implementation? What is the:

   - o strength and scope of ORT clinical services?
   - o current stock of ORS packets?
   - o amount of packets in the pipeline?

5. What will be necessary for the program to meet the increased demand for services likely to be generated by a promotional campaign?

6. What are traditional treatments of diarrhea among medical and other health practitioners?

7. What are the priority needs for creating awareness and overcoming resistance among medical and other health practitioners?

8. What are the prevailing levels of knowledge, attitudes, and practices (KAP) concerning diarrheal disease among the target audiences? What kinds of communications strategies are likely to be most effective, given the current KAP?

9. What is the nature of the communications system as regards:

   - o number and type of mass media, public and private;
   - o other public and private systems that could be mobilized;
   - o patterns of radio ownership and use;
   - o the literacy level of the target audience;
   - o the influential people in the target communities who can be mobilized to participate in a communications program?

10. What communications capabilities (public- or private-sector) exist in these areas:

   - o program design and planning (message development, instructional design, broadcast scheduling, etc.);
   - o radio program production;
   - o graphic design and production;
   - o training;
   - o distribution of promotional materials?

11. What research and evaluation capabilities (government ministries, universities, market reseach firms) exist for:

- o preliminary KAP surveys;
- o pretesting of educational materials;
- o project monitoring;
- o impact evaluation?

12. What individuals and/or institutions are capable of and available to manage a national ORT communications program?

13. What are the estimated costs of a communications program for all the options, including:

- o broadcast time;
- o printing;
- o direct education of health providers;
- o long-term technical assistance?

ANNEX I

DETAILED CHECKLIST FOR COMMUNICATIONS PROGRAM PLANNING

I. AUDIENCE

A. General Demographic Information

1. Size: Total population - urban, semiurban, rural isolated
2. General dispersion pattern of population - village, town, homestead, other_____
3. Existence and reliability of roads
4. Telephones and telegraph
5. General literacy levels

B. Primary Audience (Women with children under 5 years of age)

1. General Information
   - Size
   - Languages
     - Principal_____% of population____
     - Secondary_____% of population____
   - Important sub-cultures not reflected in language data
   - Principal livelihood
   - General socio-economic status (income available for consumer products)
   - Child-rearing practices
     - Number of children per family
     - Typical age range of children
     - Breastfeeding practices
   - Who cares for child at critical ages?
     - Birth to 6 months
     - 6 months to 1 year
     - 1 year to 3 years
   - Who determines feeding patterns?
   - Community organization pattern
   - Key community leadership roles
   - Community decision-making process
   - Innovations successfully introduced in the past decade
   - History of previous government programs: attitude of people toward government
   - General style of rural marketing patterns
2. Media Usage
   - Family control of communication medium
   - Common listening times
   - Preferred stations
   - Preferred types of programs

Print media available in villages
User constraints to using broadcast media
Cost of batteries
Reception quality
Language and broadcast

C. Secondary Audiences

1. Health Services
Who influences policy decisions on diarrhea, immunizations?
How can these people be reached regularly (newsletters, meetings, mailings, media)?
Who has primary contact with users?
How can they be reached regularly?
Whom do users see as most credible source of information within health service?

2. Private Sector
What role do pharmacies play in influencing mothers' view on diarrhea and immunization?
What advice do pharmacists now give mothers?
What other private-sector agencies and/or activities reach the user community?
Are consumer products widely available?

3. Traditional Village Opinion Leaders (midwives, TBA, others)
How can these people be reached?
Who influences women's views on diarrhea, immunizations?
What role can we play in influencing women?

II. CHANNELS

A. Broadcast

1. Estimated number of people in country with radios plus TV receivers
Urban_____
Rural_____
Number of radio, TV broadcast facilities_____
Popularity_____
Broadcast costs
Small station_____
Large station_____
Cost for spots: radio _____ TV_____
Costs for 20 to 30 minutes: radio_____ TV_____
Broadcast quality
Modernity/condition of equipment
Experience/training of personnel
Diversification of personnel
Type of programming
Educational _____%
Entertainment _____%
National Language _____%

Local languages _____%
Tradition of spots?
Type of advertising
(original/imported)?
Scheduling of advertising breaks
Existence of current advertising campaigns?
Experience with instructional or social promotional campaigns?
Production capacity: type of equipment available
Costs
Production format: tape, cassette, record, live
Personnel: editors, program designers, script-writers, narrators, (languages)

2. Ministry of Information
Regulatory aspects
Censorship clearances required for use of media?
Requirements that broadcasters and others provide time, PSA equivalents, production assistance, etc.?
Are there other government programs using broadcasting?
Any cross-sectoral ministerial activities?
Ministry of Information programs?
MOI as information source
Can they provide lists of broadcasts, print entities, organizations in relevant areas (broadcast production, printers, advertising agencies, marketing groups)?

B. Print

1. Print capabilities
Government
Private

2. Costs
Three-color covers
Photographic layout
Newsprint material
Typesetting

3. Resources
Availability of photographers: Cost_____ Quality_____
Availability of artists: Cost _____ Quality_____
Reliability of printing schedules

4. Need for government approvals (FCC-type institution) for messages?

5. Print distribution system

6. Normal and informal mailing system

C. Interpersonal

1. Ministry of Health
   - What are the national health priorities?
   - What are the stated health objectives?
   - Where is money now being invested?
   - Where is new investment planned?

2. Overall Health System
   A diagrammatic description of the system's components, with special emphasis on health education responsibilities and activities
   - Competence
   - What medical association exists, and what role does it play in determining public health priorities?
   - What role do medical schools play in public health decisions?
   - What is offical policy and general attitude toward herbalists and community health folklore in health service?
   - How effective is MOH commodities distribution system?
   - Number of health clinics?
   - Number of health workers?

3. Health Worker Training (excluding MDs,
   Who does training with specific objectives?
   - Government
   - Industry
   - Private schools
   - Tutors

   How is training organized?
   - How frequently?
   - Local, remote, central
   - Travel to and from training
   - Is training release-time possible?
   - For how long can they stay?

   What is track record of MOH?
   - Whom have they taught to do what, when?
   - Where is there are resource for translating project targets into training targets?

   Who has competence and resources to measure training outcomes?
   What incentives can be applied to encourage learning by
   - Health workers
   - Mothers
   - Children?

   How can you give new trainees technical support while they are novices?
   Who can coordinate training curricula and media with project components?
   Are health workers currently training mothers in something?
   - How well?
   - Do they follow a formal approach?

   What incentives can be applied to maintaining newly learned-behavior (for example, commendations, increased allocations, and prestigious visits)?

4. Other Counterpart Institutions (Agriculture, Education, Social Welfare, etc.)
   - Name
   - Official Status
   - Existing health-related programs (if any)
   - Objectives
   - Financing
     - Amount
     - Source(s)
     - Probability of budgetary stability
   - Geographical area of activity
   - Principal populations served
   - Personnel
     - upper-level
     - middle-level
     - field workers
       - Number of
       - Formal training
       - Practical experience
       - Enthusiasm
       - How do field workers interact with communities?
       - How many communities per worker?
       - Where do workers contact community?
       - How often does interaction occur?
       - What languages do field workers use?
       - What per cent of the population is not covered by field workers?
   - Prior experience with infant diarrhea/immunization programs
   - Prior experience with health education (communications or media programs)

5. Traditional Channels
   Identify who has used, and to what extent they have used, the following channels
   - Traditional stories
   - Song
   - Community organization
   - Formal listening groups
   - Puppets
   - Theatre
   - Games
   - other

D. <u>Private Sector: Commercial</u>

1. Cinema
   - Are commercials seen in cinemas?
   - How many cinemas are there? In large cities____, in modern cities____, towns____, rural areas____?
   - Are there facilities for production of cinema ads?
   - Who goes to cinemas?
   - Are there mobile vans?

2. Advertising Agencies
   - List identifiable advertising agencies
   - What accounts do they have?
   - Size of accounts (media spending)?
   - Media mix of accounts
   - Audience composition by medium
   - Radio stations by size and format and by reach
   - TV station reach
   - Newspapers
   - Magazines
   - Nature and use of outdoor media
   - Cinema advertising
   - Other

   Agency Capabilities for:
   - Media planning
   - Reference/resource
   - Data used
   - Media buying and costs
   - Creative copy and promotion
   - Public relations
   - Research
   - Other

   What suppliers do they use?

   General questions
   - Best ways to reach rural audience, women, influentials?
   - How do you launch a new product?

3. Research Facilities

   Capabilities (surveys, qualitative, copy tests, distribution studies, tracking studies, usage studies)

   Consumer research resources at universities

4. Pharmaceutical Market

   Distribution Structure

   Approximately how many pharmacies are there?

   Where do they tend to be located?

   Are prices and margins fixed? By whom?

   Approximately how many pharmaceutical distributors are there?

   Where are they located

   What role does pharmacist play as educator?

   Vaccines and Oral Rehydration Products

Manufacturer	Agent	Price to Physician

   What oral rehydration products are available commercially?

Manufacturer	Agent	Retail Price

   Non-health products

   What does the distributive structure look like for a popular brand of cigarettes, batteries, soft drinks, other widely-marketed products?

   Number of:
   - Distributors
   - Wholesalers
   - Retailers

Where are the wholesalers located?
What advertising support do such products carry, as a percentage of sales?
What is the size of the company's sales force?
What advertising budget would be required in the first year for a national launch of a new brand of this product?
Can the firm reach to rural areas and urban populations?

5. Packaging Firms
   Names of firms
   Capabilities (e.g., boxes, blisterpac, paper, plastic laminates)
   Are there material shortages because of foreign exchange?

E. Private Sector: Voluntary

1. Kinds of PVOs To Identify:
   International (religious, aid, TA, family planning, women's groups)
   Local (religious, aid, community development)

2. How To Find
   TAICH country profiles
   AID PVO office (if it exists)
   Networking once in country

3. Areas of Concern/Programs they run
   Food distribution
   Hospitals/clinics
   Foster care
   Literacy/education (formal, non-formal)
   Training
   Coop
   Family planning

4. Their Outreach Strategies
   Interpersonal
   Print
   Broadcast

5. Information They Can Give
   Village situation
   Communication system structure problems
   Media coverage and skill
   Country (government) commitment
   Level of health care
   Institutional cooperation or lack thereof

III. HEALTH PROBLEM

A. Special Questions for ORT

1. What is the local health community's perception of the leading health problem in the country?

2. What is the extent of infant diarrhea?
   No. of infants in total population_____
   No. of reported incidents of serious diarrhea_____
   Per cent of infant population with serious diarrhea_____
   Relationship of serious diarrhea and age

3. How does infant diarrhea rank as a health problem?

4. What are principal causes of infant diarrhea?

5. What is the dominant attitude and/or official policy of the medical community toward the treatment of infant diarrhea?
   Pediatricians
   General practitioners
   Nurses and nurse auxiliaries
   PHC workers

6. What is the specific attitude toward oral therapy? Home-mix and pre-packaged?

7. What is attitude toward role of mother in treatment?
   In hospital and clinics?
   In unsupervised home setting?

8. What past experience exists with infant diarrhea programs?

9. What is availability of sugar and salt at various levels of systems? (urban, semi-urban, semi-rural, rural, isolated)

10. Seasonality of diarrhea and characteristics of seasonal changes?

11. What packets are now available? What do they look like?

B. Diarrhea Practices and Beliefs

1. Is diarrhea recognized as a problem by rural people?

2. What are the most common folk remedies for diarrhea?

3. What are the most common beliefs about the causes of diarrhea?

4. Who makes family decisions about medical treatment?

5. What is traditional attitude toward salt and sugar mixtures?

6. What is traditional attitude toward disease prevention?

IV. OTHER ISSUES

A. USAID Mission

1. Present AID program in infant diarrhea and immunization; history of support to education, media.

2. Individuals involved in program; their backgrounds and interests:
   Mission Director
   Health Officer
   Others
   Population Officer
   Education Officer

3. Nature of support Mission is willing to provide:
   Technical
   Political
   Administrative

B. Other Donors

1. History of WHO and UNICEF Programs (particularly regarding media, health education)

2. Major objectives of WHO program

3. Major individuals involved in program

4. WHO support for infant diarrhea program

5. Major objectives of UNICEF program

6. Principal individuals involved in program

7. UNICEF support for infant diarrhea program

8. Other international programs: FAO, World Bank, German Fund, French Assistance, Peace Corps, UNESCO, etc.

CHAPTER 10: LOCAL PRODUCTION OF ORS

Stephen Fabricant

10.1 INTRODUCTION

ORS is currently (1985) being produced in some thirty developing countries, with production histories as long as a decade in several cases. Although ORS packets would seem to be the simplest kind of pharmaceutical product to make, important lessons have been learned in the process of transferring the production technology to the less industrialized world. In addition, some of the initial assumptions made in justifying local production have had to undergo re-examination in the light of the technical, financial, and programmatic results obtained.

10.2 EXPERIENCE TO DATE/LESSONS LEARNED

10.2.1 Summary of PRITECH and Other Relevant Findings

The basic lesson is that ORS packets of good quality (i.e., efficacious formulation, standard presentation, and expected 2- to 4-year shelf life) can be produced anywhere, provided the WHO Guidelines for production of ORS (WHO/CDD/SER 85.8) are scrupulously followed. (In the same breath it must be said that these guidelines have been found to be rather conservative and can imply both a large initial capital investment and an expensive product.) The challenge to PRITECH local production consultants is to offer solutions to technical problems which are both useful and practical in terms of the client's expenditure targets, and to provide economic analyses for production plans which take into account technical realities.

To date, most local production assessments have had one or more of the following components:

- o financial and programmatic justification for starting local ORS production;
- o technical and economic pre-feasibility studies for local production;
- o studies and recommendations for increasing production beyond an existing level;
- o studies and recommendations for reducing cost of existing production;
- o attempts at solutions to problems in technical production or quality;
- o recommendations for changes in formula, presentation, or packaging of locally-produced ORS.

The above components have been relevant to both private- and public- sector production. To this list can be added one component which pertains mostly to

the private sector: suggestions of incentives and contractual arrangements which will encourage private-sector production and marketing of ORS or sale to the public sector at an acceptable low price.

10.2.1 Summary of Options

A. Make or Buy? Local Production vs. Importation

While self-sufficiency after donated supplies are terminated is often advanced as an argument for establishing or augmenting local ORS production, there will be situations in which it is impossible to make a case for local production which will withstand rigorous financial and technical analysis. A compelling argument for or against local production can be supported by considering the following factors:

1. Product Diversity: At present the only ORS product available on the world market at a low price is the "WHO standard" 27.5 gram (1-litre solution) foil packet with English, French, and Spanish labeling. Available to developing countries free in limited quantities or in virtually any quantities at low cost ($0.05 per 1-litre packet FOB UNIPAC, as of this writing) through reimbursable procurement, this represents an attractive product due to its price and quality. If, however, the ORT program's needs are better filled by a packet of different size or shape, one with pictorial or local language labeling, or by a flavored formula or different dosage form, the best alternative to importation may be local production.

2. Product Freshness: While the shelf life of the standard package produced by large firms in the developed world is around four years under reasonable storage conditions, about a year of this will have elapsed by the time the ORS arrives at its destination, due to intermediate storage and transit periods. Local production can eliminate this lapse if the distribution system is well managed.

3. Reliability of Supply: This factor can weigh either in favor of or against local production. While unexpected delays in finished ORS procurement through donor agencies are not unknown, neither are difficulties in timely procurement of the starting materials for ORS packet production. Automatic filling-sealing machinery is complex and vulnerable to breakdowns which can be lengthy if skilled technicians and spare parts are not available. Many other factors can conspire to make local production potentially as unreliable as importation. There are no grounds for assuming that ORS production will be discontinued in industrialized countries in the foreseeable future.

4. Costs: While it is theoretically possible to produce locally an ORS packet equivalent to those available from UNIPAC at the same or less cost, this has rarely been achieved in practice. Only when utmost attention is paid to procurement of the costlier materials (glucose and foil), and the production process is managed to maximize use of capital equipment and minimize waste, can costs close to $0.05 per litre be realized. Substitution of local materials may reduce hard currency costs, but not necessarily total costs. The labor cost component in even semi-automatic packet production is

quite low compared with cost of materials, as are all other local cost components. In short, cost differential is a factor that most often weighs against local production.

5. Lead Time: The time to originate an initial order for ORS and receive it may conceivably exceed a year, but it would be naive to expect that a production facility could be established in less time.

When all these factors have been taken into consideration, there is one situation in which local production becomes an unequivocal necessity: when the one-litre sachet is clearly unsuited to the needs of the national CDD program, and an alternative sachet or other presentation cannot be easily imported at reasonable cost.

A second situation that might make local production the only choice is when the national CDD program (or the commercial marketplace) demands that the instructions for use on the sachet be in a local language or in pictorial form. This is a slightly less powerful argument because it is theoretically possible to use stick-on labels, place UNICEF packets in appropriately labeled plastic bags, or import the product from a country which produces sachets with instructions in a shared language or with the desired pictures.

A third argument for local production applies when there is potential for significant cost savings over reimbursible procurement through UNICEF. As suggested in the discussion of costs above, only a relatively rare combination of circumstances will allow local production at an ex-factory cost below $0.05, the UNICEF landed cost: a climate suitable for polyethylene packaging (where citrate formula is used); practicality of manual or semi-automatic packaging equipment; a pre-existing partially-equipped production facility; a free and favorable exchange rate with countries that export the required raw materials; a high value placed on local employment of semi-skilled workers; willingness of the potential producer to accept reasonable profit margins; and accounting policies that result in moderate allocated overhead costs. (It is worth noting here that the effect of a devaluating dollar will be to make local production more advantageous for countries that have stable exchange arrangements with materials-supplying countries, such as those in the FCFA region. In this case, the cost of materials will remain constant while the UNICEF dollar-denominated price will rise with devaluation.)

B. Local Production: By Whom?

1. Public vs. Private Sector: The question of where to initiate or expand ORS production seems to be easily answered in most countries in comparison to other issues. In those relatively few instances where both private- and public- sector pharmaceutical production facilities exist and are equally qualified in terms of relevant experience, technically skilled personnel, and available space and equipment, the decision will usually be based on whether government can exert some degree of control over the price charged for ORS by the private sector. In most cases, however, either the private sector is so far advanced and/or the government so impoverished that there is no serious consideration given to public sector production, or else most or all pharmaceutical production is carried out in the public sector and no real choice exists.

2. Encouraging the Private Sector: The situation sometimes arises in which the government would prefer the private sector to participate but cannot seem to find the necessary inducements. Several strategies have worked in this instance, including donor financing of production equipment, guaranteed government procurement, waiver of import duties, public promotion of ORT; other strategies are sure to be tried in the future. A reasonably accurate projection of demand for ORS must be presented to the private sector with careful consideration of the effect on demand of promoting home-made solutions, if that is a part of the overall CDD program.

If purely commercial distribution is contemplated, UNICEF packets may be neither available nor desirable. If a local pharmaceutical firm recognizes a potential for profits in the market for ORS, it would probably prefer to market a distinctive product, particularly if UNICEF sachets have been previously distributed at no charge in the country. In this case, local production could be supported and encouraged if the firm's pricing, promotion, and distribution strategies will increase overall accessibility to ORS in the country as ;a whole and among the target population in particular. Private-sector production can be encouraged by conducting cost studies and market analyses; by devising and helping to negotiate ways of reducing the financial risk in entering the low-price end of the market; by providing technical assistance in facility planning and equipment procurement; and by exploring ways to reduce or eliminate import duties on equipment and materials for ORS production.

3. Regional Production: An issue related to production sector and venue is the potential for regional production. Although not yet implemented, there would seem to be strong practical reasons for attempting this. Several countries in the same geographical and language area may individually have populations too small to support a cost-efficient ORS production facililty, but when aggregated could sustain such a facility. In addition to economies realizable by running filling-sealing machines near their maximum capacity, significant savings can be made by ordering long runs of packaging foil printed in the local language.

4. Pre-Qualification for Production: Although ORS packet production is simple compared with some other pharmaceutical processing, its specialized requirements facilitate rational selection among multiple interested firms, should this favorable situation exist. Requirements for standard ORS packet production would include:

- o experience in processing temperature- and humidity-sensitive materials;
- o experience in packet (sachet) production, especially of non-free-flowing powders;
- o experience in dry powder mixing and batch preparation;
- o quality control laboratory for packet integrity and analysis of sodium/potassium content;
- o adherence to Good Manufacturing Practices (GMP) established by the pharmaceutical industry.

5. Production in the Non-Pharmaceutical Sector: The use of foil and plastic sachets as packaging is ubiquitous in the food and cosmetic industry, and the use of such facilities as "contract packagers" may be worth considering if the purchase of automatic filling-sealing machinery for ORS alone is impractical. Food and cosmetic factories are likely to exist in consumer-oriented countries, but their use would require particular attention to quality control, which may not be up to desired pharmaceutical standards. No specific instance of ORS production in this sector is known to PRITECH, but there is good reason for PRITECH assessments to evaluate its potential in appropriate countries. If a popular-priced pre-mixed liquid ORS is ever to be produced, it may well originate from food industry plants.

6. Laws and Regulations: Where control over product quality is a concern, program designers should be alert to the effects of laws and regulations. Product licensing for local production or import can be used to ensure standardization of formulas. If ORS packet manufacturers deviate from WHO standards, for example lowering sodium content in products first developed for North American or European markets, the licensing authority can be asked to require adherence to the WHO standard. The authority to monitor or test product quality, often in conjunction with the licensing authority, can be used to ensure quality control. Standardization and quality control will most often involve application or enforcement of existing regulations, rather than establishing a new regulation.

7. Other Requisites for Local Production: Apart from the actual ORS packet production facilities, an assessment should determine the presence and costs of such ancillary functions as printing, cartons, transportation, port clearance, and storage. The question of import duties on ORS materials should always be raised; if waiver of these is out of the question, an analysis of estimated ORS production costs should include money to be returned to the host government due to importation of materials and equipment, so that estimated ORS costs can be adjusted to their effective net cost to the government.

10.3 PROBABLE PRINCIPAL ISSUES

Such experience as has been accumulated in the years of PRITECH and WHO involvement in ORS Production is incorporated in the following discussion of issues. The WHO Guidelines for ORS Production should be regarded as the basic reference on technical matters.

10.3.1 Technical and Financial Issues

A. Formula and Presentation

The choice of ORS packet size or alternative form (i.e., tablet or solution) to be produced is not, strictly speaking, a technical decision. It is usually dictated by a combination of past clinical and program experience, financial constraints, existing production capacity and experience, and the desire to innovate. The pros and cons of the alternatives will not be discussed here, but consideration of past experience may help guide the decision.

1. Costs: Holding the formula and packaging materials constant, a litre of ORS packaged in 13.75-gm. (1/2 litre) packets will cost about 30 per cent more than the standard 27.5-gm. packet, and roughly double if packaged in 5.5-gm. (200 ml) or 6.9-gm. (250 ml) units. This is largely due to the high cost of the extra foil required. Automatic filling machinery which can fill forty 27.5-gm. packets per minute might fill fifty or sixty smaller packets, so additional labor and/or capital investment is also required for the smaller units.

2. Capabilities of Producers: Pharmaceutical companies will often have more experience and equipment available for tabletting and strip-packing ORS than for filling and sealing packets. When this is the case, tablet presentation such as that developed by PATH may be preferred for strictly financial reasons.

3. Shelf Life: Cost savings in packet production are possible, but generally a tradeoff with storage life is involved. In order to make rational decisions about substituting less costly ORS ingredients and packaging material, it is essential to know what shelf life is required. This can be determined after an analysis of the distribution system and program strategy. (The PRITECH ORT Country Assessment for Philippines provides additional background information and a detailed analysis of this tradeoff.) Now that the substitution of sodium citrate for sodium bicarbonate is offically sanctioned by WHO, we should start to gain accurate data about its shelf life with various packaging materials of lower cost than the standard foil laminate. Available information suggests that greater stability should result under nearly all conditions, and unless extreme humidity prevails where packets are stored, a simple polyethylene envelope may provide adequate shelf life.

B. Production Equipment

1. Semi-Automatic and Manual Equipment: Under certain circumstances, semi-automatic and manually-operated dosing-filling-sealing equipment will have a clear advantage over automatic equipment. These circumstances include:

- o when annual packet demand is not expected to exceed one or two million (at this level of demand, a basic automatic machine with its capacity of four million a year or 40 a minute would be vastly underutilized unless time-shared with another product);
- o when there is a specific requirement to employ as many people as possible;
- o when conditions are unsuitable for using automatic equipment: poor electricity supply, lack of technical maintenance skills, extremes of temperature and humidity;
- o when start-up capital is extremely limited;
- o when packaging materials such as polyethylene are used which are not appropriate for automatic equipment.

2. Types of Equipment: WHO has developed semi-automatic and manual equipment which is now available through UNICEF. Aside from this approved equipment, it would be well to consult WHO before placing an order for any piece of machinery, unless it has demonstrated particularly good performance in a country. Along with WHO recommendations, PRITECH and other relevant expericnce suggests some specific concerns to be considered in choosing equipment:

- o ORS powder is not very free-flowing, is mildy corrosive under humid conditions, and produces fine dust which can interfere with the perfect seal needed to ensure packet integrity. The experience in developing countries with various types of semi-automatic filling-sealing equipment suggests that certain of the many types and makes available are more suitable for ORS production than others.

- o Simple drum-type mixers have been found to perform better than plough-type mixers. Similarly, ordinary tray driers are quite adequate, and the purchase of a fluidized-bed drier should not be recommended. If one already exists at the production facility it may be tested with ORS mixture, but completely satisfactory results may be difficult to obtain.

- o In estimating depreciation, it has become customary to assume a life of five to eight years. It is wise to adhere to this assumption, even though there are many instances in which automatic equipment of good quality can function for ten years and more if properly maintained.

C. Use of Locally-Available Ingredients

Substitution of locally-available ORS components is acceptable and should be encouraged, but must be done with caution and may not always be worth thc cost savings obtained. Anhydrous glucose can be replaced wholly or in part by monohydrous glucose or by sucrose. Over twice the weight of sucrose will be required, increasing both the amount of packaging material and the ORS storage volume required. Monohydrous glucose is an optional part of the WHO recommended formula and may yield a reasonable shelf life when the base used is citrate, but there is no documented demonstration of long-term stability at this time. At current price levels there is relatively little savings to be had with either of these substitutions.

Local table salt can be substituted for pharmaceutical grade, provided it contains acceptably low levels of such impurities as heavy metals. Food-grade sodium bicarbonate is certainly acceptable in ORS, but the savings through both these substitutions will be small.

Alternative packaging materials represent a way of significantly reducing the cost of ORS. Polyethylene film is likely to be made locally and can usually be printed or a locally-made paper label inserted. When used for a citrate-based ORS formula it can provide excellent stability in a dry climate, and if the base is packaged separately from the sugar it can be unequivocally said to make a produc with an adequate shelf life.

10.3.2 Production Problem-Solving

The specific physical characteristics of glucose and the ORS mixture have been the cause of most production problems encountered to date. Defective packaging foils have also been a cause. Since this level of problem-solving is not strictly a part of the PRITECH assessment phase, the major problems are listed here with minimal discussion.

A. Glucose Bulk Density

A simple ORS mixture made with glucose having low bulk density may be too high in specific volume to be able to fit the correct weight (e.g., 27.5 gms.) into the standard-size packet.

B. Glucose Flowability

A crystalline form of anhydrous glucose tends to flow more freely than a fine powder. This makes dosing by auger fillers more accurate and may even make it possible to use existing machinery with volumertic fillers. Less dust is also produced.

C. Moisture Content

Premature caking and discoloration in bicarbonate-base ORS mixtures can be caused by use of monohydrous glucose. When the anhydrous form is used, problems are generally due to poor packet sealing or to failure to dry the mixed powder to under 2 per cent moisture and maintain the room in which filling takes place to 40%-60% relative humidity.

D. Sealing

Poor sealing may be due to defects in the foil leading to either excessive buildups on the sealing jaws or voids in the polyethylene layer. Quality control testing for leaks by means of a simple vacuum apparatus is mandatory. And finally, incorrect machine adjustment is always a possible cause of inadequate sealing.

LOCAL PRODUCTION OF ORS

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 10.

I. Technical and Financial Issues

A. Formula and Presentation

1. What are the cost considerations of packaging ORS in 1/2-litre, litre, 200-ml, and 250-ml packets?

2. Are there pharmaceutical companies available that can tablet and strip-pack ORS more cheaply than filling and sealing packets? If so, does this justify the choice of tablets over packets?

3. What is the shelf life of the particular ORS formulation under consideration? What would be the shelf life of a less expensive WHO-approved formulation? Are the ORT program strategy and distribution system consistent with the shelf life of a less expensive formulation?

B. Production Equipment

1. Do annual packet demand, employment policies, environmPharmacists: What is the status of pharmacy? Any local schools of pharmacy? Any industrial pharmacists in the country? In the government? Does industry hire away all good pharmacists interested in and capable of operating as ORS production plant?

- o Industrial engineers, production managers: Are such individuals available to help manage an ORS plant?

c. Government Legislation and Policies

- o Are there any local incentives for private industry to start ORS production?

C. Expanding Production Capacity

1. What is the capacity of the present production facility(ies)? Which factors (machinery, manpower, space, etc.) are currently limiting production?

2. Can any external facilities such as contract packagers be put to use to increase production without the need for major additional investment in equipment?

3. If the private sector wishes to participate in ORS production, what formula/presentation/dosage do they want to use? At what price do they expect to market it?

4. Are new facilities prepared to install the necessary auxiliary facilities for ORS production (dehumidification, drying ovens, quality control equipment, moisture balance, etc.) where they do not already exist?

5. Do new potential facilities have any experience with similar products?

6. What prices are currently paid for ORS ingredients?

7. How will production costs be calculated?

II. Production Problem-Solving

A. Has careful consideration been given to the importance of glucose bulk density, glucose flowability, and moisture content in choosing ORS ingredients?

B. Is there provision for assurance of adequate sealing by quality control of materials, testing for leaks, and correct machine adjustment?

ANNEX I

SUPPLEMENTARY QUESTIONS FOR MORE DETAILED ANALYSIS OF LOCAL PRODUCTION CAPABILITIES

A. Justification for Local Production

1. Will donated supplies be provided indefinitely, or will some cutoff date be stipulated for the CDD program?

2. Will reimbursible procurement through UNICEF/WHO or any other agency be a possibility after the cutoff date?

3. Does the program plan and communications analysis call for special labeling of ORS packets (local languages, pictorials, etc.)?

4. Has some non-standard ORS formula or presentation been selected (e.g., flavoring, smaller than 1-litre packets, tablets, etc.)?

5. What is the projected demand for ORS?

6. Is ORS now being produced in country?

7. Have any organizations expressed an interest in producing ORS?

8. Do any local organizations claim to have existing facilities and equipment for ORS production?

B. Preliminary Feasibility Assessment

1. Current In-Country Pharmaceutical Production

Is government or the private sector the present source of:

a. Primary manufacture of active ingredients (high technology)

b. Secondary manufacture (processing active ingredients into finished-dose products)?

- o Oral solutions
- o Lotions, liniments
- o Powders
- o Ointments and creams
- o Tablets
- o Capsules
- o Liquid injectables
- o Sterile ointments, drops
- o ORS packets

c. Packaging?

- o Bulk repackaging
- o Course of therapy

2. Related Existing In-Country Capacity

a. Industrial Production

- o Food processing: Any refinement of raw ingredients or foil-packaging industries which demonstrate capacity for ORS-relevant technology?
- o Packaging: Any packaging industry or related industries with experience in foil packaging?
- o Any examples of successful production companies in anything similar to ORS production?

b. Manpower

- o Pharmacists: What is the status of pharmacy? Any local schools of pharmacy? Any industrial pharmacists in the country? In the government? Does industry hire away all good pharmacists interested in and capable of operating as ORS production plant?
- o Industrial engineers, production managers: Are such individuals available to help manage an ORS plant?

c. Government Legislation and Policies

- o Are there any local incentives for private industry to start ORS production?

C. Expanding Production Capacity

1. What is the capacity of the present production facility(ies)? Which factors (machinery, manpower, space, etc.) are currently limiting production?

2. Can any external facilities such as contract packagers be put to use to increase production without the need for major additional investment in equipment?

3. If the private sector wishes to participate in ORS production, what formula/presentation/dosage do they want to use? At what price do they expect to market it?

4. Are new facilities prepared to install the necessary auxiliary facilities for ORS production (dehumidification, drying ovens, quality control equipment, moisture balance, etc.) where they do not already exist?

5. Do new potential facilities have any experience with similar products?

6. What prices are currently paid for ORS ingredients?

7. How will production costs be calculated?

CHAPTER 11: ORS SUPPLY MANAGEMENT

James Bates
Jonathan Quick

11.1 INTRODUCTION

Supply of ORS is not a consideration in the early stages of an ORT program. The programs assessed thus far have generally been in this initial phase, so there has been very little experience from which general lessons can be drawn. This chapter is, therefore, framed entirely within the context of the probable issues to be encountered as programs develop and ORS supply emerges as a central activity.

11.2 PROBABLE PRINCIPAL ISSUES

Information collected from field visits to date suggests that, in planning ORT programs, there are three topics of primary concern in supply management: strategic orientation, determining needs, and assuring distribution.

Each of these issues is considered in turn below and the entire discussion is followed by the corresponding Assessment Checklist.

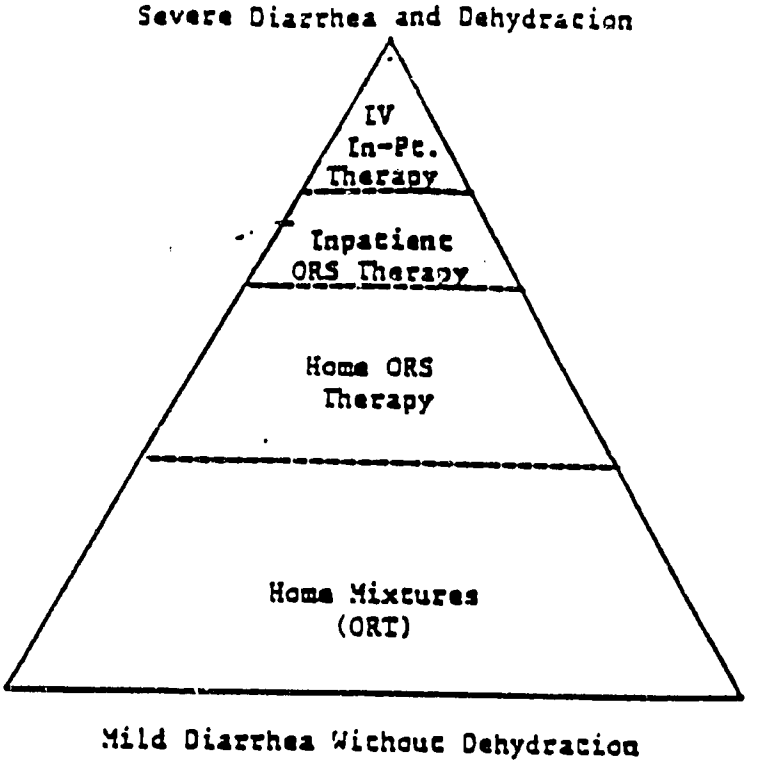
11.2.1 Strategic Orientation

For a given country, should an ORT program focus on home preparation of simple sugar and salt solution or promote the use of packaged ORS? Where ORS makes the most sense, should it be imported or produced locally? What are the alternatives in the public and private sectors for distributing ORS? Should this vital product be distributed free of charge or should it be sold? The responses to these questions will set the strategic orientation of the ORT program and determine the specific requirements for effective supply.

A. Treatment Alternatives

Diarrheal disease in children occurs on a continuum from mild diarrhea without dehydration to severe diarrhea with severe dehydration. For the majority of children requiring treatment, simple mixtures of sugar, salt, and water prepared at home or packaged ORS provide adequate therapy. More severely dehydrated children will require hospitalization and possibly intravenous therapy. The continuum of diarrheal disease and treatment alternatives may be represented as a "therapeutic pyramid" (Figure 1) within which the great majority of children can be treated with home mixtures or ORS and a very few will need intravenous therapy. While the shape of the pyramid remains constant, the policies and promotional efforts of a CDD program can markedly influence the relative proportions of patients treated through the different alternatives. Where supply management is concerned, this can result in significant increases or decreases in demand for ORS and intravenous supplies. It is thus apparent that estimating ORS needs and planning for distribution must be coordinated with the health planning decisions that determine the structure of the therapeutic pyramid. Although

FIGURE 1
THE THERAPEUTIC PYRAMID FOR DIARRHEAL DISEASE



promotion of home preparation of simple solutions may be an important component of many ORT programs, this is an approach more suitably addressed through mass communication and social marketing than through supply management.

B. Importation vs. Local Production of ORS

The first and most fundamental problem to be resolved in supply management is identification of the source or sources of ORS. Broadly speaking, there are two options: either the product will be imported or it will be manufactured locally. For each of these options, there is a range of problems to be considered with respect to financing the ORS supply and assuring that stock is available in adequate quantities.

Importing ORS is an option available primarily for programs operating in the public sector. (A familiar example is the UNICEF packets supplied through the United Nations or bilateral assistance programs.) Donor financing of limited quantities of ORS is relatively easy to arrange, so importation often appears to be the simplest approach for starting up programs. This holds true even for countries like Peru, which has a substantial production capacity.

Local production of ORS has the advantage of fostering self-sufficiency in this vital supply and lessening the lead time for acquisition. The two scenarios for pursuing this option are to set up a production unit within the public sector or to take advantage of existing manufacturing capacities within the private pharmaceutical sector. In either case, the principal - though not the only - factor determining the feasibility of local production is the quantity that will have to be produced in order for the cost of locally manufactured ORS to approximate that of imports. The estimated practical demand for the product will, of course, have to exceed this number. In many countries, USP-quality ingredients are currently used in manufacturing. Since few countries can produce ingredients that meet USP standards, local manufacturers must import them - and pay the requisite taxes to do so. UNICEF and bilateral assistance agencies, on the other hand, import ORS duty free. Both these practices work to deter local production.

Where encouragement of private-sector production of ORS is being considered, program designers should be alert to the effects of laws and regulations. Customs duties on imported equipment or raw materials, as well as taxes on production or sale, may be important financial disincentives for ORS production. Removal of duties or taxes may need to be justified by efforts of producers to make the ORT program more effective, e.g., an education campaign to increase use of ORS by mothers. The key issue will usually be whether the producer and/or the product qualify for an exception to the duties or taxes. Ministries of Finance usually determine the imposition of duties and taxes; strong advocacy from Ministries of Health and Planning may be necessary to establish the policy reasons for removing duties or taxes.

The importing and local manufacturing options are not mutually exclusive. In countries where ORT has not been extensively promoted in the past, and where the absorptive capacity of either the public or private sectors is limited, it will make sense to begin programs with imported ORS. As demand for the product builds, local production can be phased in if studies show that this is a financially rational option.

C. Distribution Alternatives

The range of possibilities for distribution of ORS is summarized in Figure 2.

FIGURE 2
DISTRIBUTION ALTERNATIVES FOR ORS

Public Sector	Non-Profit Private Sector	Commercial Private Sector
Health Programs: PHC, MCH, EPI, FP	Health Programs: religious and charitable organizations providing health care	Sale as an over-the-counter drug
Non-health Programs: schools, agricultural projects, community councils	Non-health Programs: coops, mothers clubs	Sale as a food product

D. Free Dispensing vs. Sales

As noted above, it is relatively easy to convince international and bilateral assistance agencies to provide Ministries of Health with limited quantities of ORS. Looking toward the establishment within the public sector of expanding ORT programs that will be financially sustainable, a first concern is how to pay the recurrent costs of the ORS supply. There are three apparent solutions to the problem: arrange long-term donor financing, allow for the cost in Ministry operating budgets, or oblige consumers to pay for the ORS they need.

1. Long-Term Donor Financing: In considering this solution, it must be acknowledged that most assistance agencies try to avoid paying recurrent program costs. In practice, then, it is not a realistic solution to the long-term problem of recurrent costs.

2. MOH Operating Budgets: Depending on a country's health priorities and its financial resources, paying the cost of ORS from the Ministry's operating budget may be a viable option. This would be especially true in national programs where free distribution in the public sector could be complemented with sale of ORS through the private commercial sector. Such a strategy might work as follows: patients would receive their first litre of ORS free at the clinical facility. Mothers would be given packets of one litre or more to take home with them and be instructed to purchase additional packets as needed from commercial retail outlets. Poor families could receive additional packets at no cost, upon a return visit. Thus, promotion of home care for infant dehydration and commercial distribution of ORS would limit the quantities of the product required for the public sector.

3. Customer Payment: Historically, many Ministries of Health in developing countries have adopted the nominal policy of providing drugs (and other health services) free of charge to their patients. More often than not, financial resources have not been adequate to sustain this laudable objective. This has resulted in under-budgeted, under-supplied, and poorly-utilized public sector health systems. Recently, Ministries have begun to recognize with increasing frankness that, in order to maintain even minimal standards of health care, it will be necessary to recover the cost of the drugs they provide by selling them to patients. Countries as varied as Haiti, Togo, and Peru have resorted to selling drugs within public sector facilities and using the revenues to finance acquisition and distribution costs. In Ministries that already have drug sales programs or where modest fees for service are not politically contravened, sale of ORS may be a viable means of paying the cost of the supply.

Planning for ORT projects will almost invariably begin in collaboration with Ministries of Health, since they are responsible for determining their country's health priorities. As a corollary to this, the establishment of ORT as the preferred treatment for dehydration in children within those systems provides the foundation for national programs. In most developing countries, however, the proportion of the population served by the public sector health system is usually quite modest - often below 20%. Under these circumstances, maximum impacts cannot be expected if distribution of ORS is limited to this sector.

The other distribution options that must be considered are the non-profit and commercial segments of the private sector. The first of these includes religious and philanthropic organizations that provide health and social services. The second refers to the commercial manufacturers of pharmaceuticals, plus wholesale and retail outlets of any category that would provide viable channels for distribution of ORS.

For the long term, multiple and mutually supportive ORT/ORS delivery strategies will be required in order to achieve the greatest coverage. In the short term, however, successful introduction of ORT/ORS will depend on identifying the most practical distribution methods in either the public or private sector. For example, in a given country the Ministry's PHC program may have the broadest coverage on paper while vertical programs in EPI or family planning have the only effective distribution systems. In this case, initial ORT/ORS efforts would be most productively directed towards the vertical programs.

Although achieving the broadest possible coverage requires distribution through both the public and private sectors, conditions in a given country will frequently favor an incremental approach. In the Philippines, for example, the Ministry of Health has already achieved effective distribution of ORS throughout its services delivery system; the next step would logically be to distribute low-cost ORS in the private commercial sector. Chad presents a contrasting example. There, ORT is not widely practiced within the Ministry system. Most of the country's health services are provided through non-profit private-sector facilities, some of which practice ORT but many of which do not. Finally, due to geographical and political factors, the network of commercial wholesale and retail outlets does not provide viable channels for distribution of ORS. Current conditions in Chad thus favor a program in which ORS distribution activities focus on the Ministry's health care system and the non-profit private sector.

11.2.2 Determining Needs

In comparison with forecasting other essential drug requirements, determining ORS requirements would seem to be a rather simple matter, since there is basically one drug - ORS - for one disease - acute diarrhea. In practice, accurate determination of ORS supply and demand has proven rather difficult. Annex I presents a model for planning ORS requirements which summarizes the variables that must be considered in determining the effective demand, effective supply, and resulting consumption of ORS.

Estimates of ORS requirements vary considerably, depending on estimates of the incidence of diarrhea, projected treatment patterns (structure of the therapeutic pyramid), expected population coverage, and assumptions about other planning parameters. The range of estimates of ORS requirements is illustrated by two country assessments. In Pakistan the overall ORS requirements were estimated to be 1.8 packets per year per child under age five, while in Bolivia the average ORS demand was estimated at 7.2 packets per year per child under age five. Only a portion of this four-fold difference is attributable to differences in the incidence of diarrhea.

Actual consumption of ORS can vary profoundly, depending on the distribution structure and promotional methods. Annex II summarizes data from an Egyptian experimental study of nearly 29,000 children between the ages of one month and five years which show a ten-fold variation in ORS consumption related to differences in the experimental inputs! (These findings are borne out by the recent PRICOR interim report from Egypt, dated March 1985.)

In addition to the ORS delivery strategy, other variables listed in Annex III can have a significant impact on the demand for ORS. For example, a recent review of over two dozen water supply and sanitation programs found median reductions in the incidence of diarrheal disease of 30-40%.

As a practical measure, the quantity of ORS required for treatment of one episode of diarrhea in infants or children is set at two 1-litre packets. Using this norm of treatment as a starting point, there are three principal approaches to determining needs for ORS to be distributed through the public sector. Each of these approaches has advantages and disadvantages.

A. Population-Based Approach

Those using this approach must survey and/or estimate the prevalence of diarrheal disease in the population, and, based on the standard norm of treatment, estimate the quantity of ORS needed to treat the population. Estimates of need based on population determine the theoretical "ideal" for a population and provide for the most generous quantities of the three approaches. This has value where resources are likewise generous and helps cover leakage that invariably occurs within the system. This approach is most appropriate for countries planning ambitious ORT programs, where there is little prior experience on which to base consumption estimates, and where program objectives are expressed as measurable reductions in mortality. It will not work well where the available data on health problems are sketchy, widely variable by region, or otherwise inaccurate.

B. Service-Based Approach

This approach is based on determination of the number and types of health service providers who will be treating diarrheal disease. Based on the amount of services to be provided, one can estimate the quantity of ORS that they will need. Service-based estimates derive from the number of ORT interventions that will be provided through a precisely defined set of programs. As such, they incorporate the technical, financial, administrative, and cultural constraints with health services delivery systems and they tend to produce quantities lower than population-based estimates. Some observers feel that this is a more realistic needs estimate, one that presents a "true picture" of what the health services delivery system can do. The principal drawback of service-based estimates is that they apply only to those patients who seek attention in the service delivery system and do not reflect the true needs of a target population. Physical inaccessibility or lack of knowledge about ORT may prevent patients who should seek this service from doing so. As ORT programs expand services to previously inaccessible segments of the population, or as promotion increases demand, service-based estimates can underestimate needs. One way to minimize this problem is to set service targets as a percent of the known health

problem: for example, proposing that the ORT program will treat 50% of all severe cases of diarrhea. Another method is to look at the number of cases of diarrhea that health care providers are treating, estimate the quantity of ORS needed for these, and then recalculate the needs on the basis of the number of interventions projected for the new ORT program.

C. Consumption-Based Approach

This approach relies on gathering information from health service delivery units on previous consumption of ORS. On this basis, estimates of the quantity that will be needed are made. Consumption-based estimates are useful where good historical data on ORS consumption exist and where demand for ORT program services has reached a steady state. This approach requires a reasonably accurate information system that records inventory levels over periods of time (at least one year, to include seasonal variations). Where these conditions exist, consumption-based estimates are easy to develop. If, however, program services are in a rapid growth phase, or no consumption information exists, this method will not provide accurate estimates. In particular, it should be noted that off-take from storage facilities is not the same as demand for health services at the provider level: there may well have been people who needed ORS but were unable to obtain it because of shortages. To this extent, consumption records underestimate real demand.

These three approaches to estimating ORS needs are simply that - approaches. For each one, a variety of specific methods for calculating estimates is possible. Annex III provides an illustrative method of calculation for each approach.

All three approaches share a need for reliable information. In general, the epidemiological data, service statistics, and consumption histories upon which these approaches are based are hard to come by. Where the public sector is concerned, it is fair to say that most Ministries of Health have poorly organized record-keeping systems and that the data they generate are often incomplete, incompatible, or both. In most cases it will not be possible to apply any of these approaches rigorously, and a good measure of "intuitional" judgment will be called for. For estimating needs, then, the first assessment objective is to determine the types and quality of information available. Once this is done, the most practical approach for the situation at hand can be developed and the primary objective of actually calculating ORS supply requirements can be fulfilled. These approaches to estimating needs will have varying degrees of utility for sales programs based in the private sector. Population-based estimates provide a measure of the maximum demand that may be expected, while service-based and consumption-based estimates provide indications of current demand for ORS. Actual needs for commercial sales programs, however, will be tied to sales targets and marketing strategies. These problems are discussed in detail in Chapter 12.

11.2.3 Assuring Distribution: Public Sector

"The difficulty of providing a continous supply of these prepackaged salts has been identified as the most important constraint in the implementation of national programmes." (WHO, 1979)

A. Pipeline Management

Assuring a constant supply of ORS at health service facilities requires coordination of three distinct processes of supply management: procurement, storage, and distribution of stock. The flow of supplies from source to patient is frequently described as a "pipeline." The pipeline concept is expressed in two dimensions: physical structure and length in time.

The physical structure consists of the storage and transport links that are interposed between the source and the patient. The length of time is expressed as the number of months that it takes a unit of stock to pass from one end of the pipeline to the other. The two dimensions are illustrated in Figure 3. In order to assure an uninterrupted flow of supplies, management decisions and administrative routines for such diverse activities as forecasting needs, determining order quantities, preparing procurement orders, clearing shipments from customs, storage, stock control, and delivery and dispensing of ORS, must be carried out on the basis of reliable information and in a coordinated manner. A principal objective in assessing public-sector distribution systems for ORS is to gauge their capacity to achieve the level of coordination necessary for effective pipeline management.

1. Procurement: Concerning procurement, the initial question to be resolved is the manner in which the Ministry will procure ORS. The three options to consider are donation, foreign purchase, and local purchase. In some cases, all three options may be phased over time into one program. The efficiency of the bureau responsible for executing procurements is a critical factor for assuring the flow of supplies into ORT programs. Where the supply pipeline is long (as in Figure 3) and successive phases of program expansion are planned, it is necessary to execute well-timed procurements far in advance of actual need in order to avoid serious stock-outs. To evaluate a Ministry's capacity to procure effectively, it is necessary to have a practical knowledge of the "organizational mechanics" of the procurement process. This means identifying all the offices and bureaus involved in each type of procurement and understanding the steps required to carry each through to completion. For example, foreign purchase of ORS might involve the ORT Programs Office to determine needs, the Procurement Office to advertise for tenders, a Selection Committee to choose the winner, and the Finance Office to arrange a letter of credit. Negotiation of donations would involve a different (though not necessarily less complex) process.

Experience in ORS programs to date confirms the importance of giving careful attention to each step in the classic procurement cycle. Scheduling deliveries and monitoring order status are of particular importance. In a recent South American case, 2.8 million ORS packets failed to arrive in time for the launch of a national promotional program, and emergency supplies had

to be obtained. Furthermore, divided deliveries were not scheduled, creating the concern that, even if the 2.8 million packets did arrive, the central supply system would be overwhelmed.

FIGURE 3
MODEL OF AN ORS SUPPLY PIPELINE

Physical Structure		Length of Time
UNIPAC Warehouse	Preparation of order	1 month
	Sea Transport	6 months
Customs	Port Clearing	2 months
MOH Central Warehouse	Safety Stock	6 months
	Working Stock (quarterly deliveries)	3 months
MOH Regional Warehouses	Safety Stock	3 months
	Working Stock (monthly deliveries)	3 months
Health Service Facilities	Safety Stock	1 month
	Working Stock (daily dispensing)	1 month
		24 months

2. Storage: A million packets of ORS occupies 270m^3. The WHO-approved formula, packaged in the standard polyethelene and foil laminate and stored at temperatures not exceeding 30 C, with humidity not exceeding 80%, has an estimated shelf life of 36 months. WHO guidelines for storing ORS are given in Annex IV. Other formulations and packaging modes have varying shelf lives, as shown in Annex V. The basic issues to be considered with respect to storage concern the quality and quantity of storage space. In most countries, both quality and quantity of space tend to diminish as one moves from central to regional warehouses and on out to clinical facilities. Where storage is concerned, the principal assessment objectives are to estimate the amount of space available, plot its distribution through the supply system, and assess its suitability for safekeeping of ORS.

The nature of ORS packaging and contents tends to exacerbate existing chronic storage problems. In one recent study of ORS supply, nearly half the respondents reported damaged packets: 21% had holes eaten in them by cockroaches, ants, rats, and other small animals; 19% had become wet; 14% had come unstuck or been torn open. Supply managers should be made aware of the special problems involved in ORS storage. When available storage space is

judged less than optimum, risks can often be minimized by adjusting other parts of the system so that storage periods in those places can be kept as brief as possible.

3. Distribution: Once the Ministry's segment of the pipeline is filled, that is, once the network of storage and clinical facilities is stocked with ORS, it must be moved on down through the system at a rhythm that responds to demand and makes adequate quantities of the product available to patients. With respect to transport, the principal assessment objective is to identify the resources available for moving the ORS between storage points. These resources may consist of Ministry (or other government agencies) vehicles or budgeted funds to pay for commercial transport. The manner and efficiency with which drugs and medical supplies move through the system will provide a good measure of existing capacity to transport ORS. It frequently occurs that transport is ineffective for reasons other than simple lack of resources. In situations where Ministry vehicles are adequate in number but irrationally scheduled, or where bureaucratic red tape prevents timely utilization of commercial transport, there is potential for achieving good service without unrealistic increases in resources.

B. Inventory Management Strategies

To assure the flow of ORS down through the supply system, it is necessary to adopt appropriate strategies for scheduling deliveries and determining stock levels. The current practices of a Ministry's drug supply system may or may not be an appropriate model for an ORT program. In many of the neediest countries - the most likely settings for PRITECH projects - drugs are in such short supply that conventional inventory management models become meaningless. The small quantities of drugs that can be delivered to clinical facilities are pounced upon and consumed immediately, and there is no reason to pontificate about the theoretical relationship between delivery interval, order size, and safety stocks. By contrast, if an ORT program is even moderately successful, the rate of flow of ORS through the system should be relatively high. If this is so, the question then becomes: what inventory management strategies would be most appropriate for the situation at hand?

There are several possible types of delivery schedules, varying from rigid to highly flexible. In order of increasing flexibility they are:

1. fixed order size/fixed order interval;

2. fixed order size/variable order interval;

3. variable order size/fixed order interval;

4. variable order size/variable order interval.

The order size and order interval are interrelated. The order size determines how often it will be necessary to deliver ORS. Thus the frequency of deliveries can be reduced by increasing order size. However, an increase in the size of orders consequently increases the quantities of stock that must be maintained at lower-level storage and clinical facilities.

For any type of delivery schedule to work properly, there are maximum and minimum stocks of ORS packets that should be maintained at storage and clinical facilities. The minimum stocks must be large enough to cover periods of high demand and to provide an adequate quantity of ORS while waiting for the arrival of the next delivery. Yet, the stock should not be so large that it cannot be safely stored or will spoil before it can be used. A number of factors should be considered in determining stock levels.

- o Seasonal variations in demand for ORS. Where variations are extreme or frequent, lower-level facilities need to maintain large stocks.

- o Costly or difficult transport. Where transport is a problem, maintenance of large stocks at lower levels reduces the frequency of deliveries.

- o Reliability of source of supply. If the sources of ORS, local or foreign, are uncertain, it might be advisable to initially distribute large stocks throughout the system. This would also be a prudent strategy if the Ministry's capacity to procure efficiently is in doubt.

- o Lead time. If the lapsed time for ordering and receiving ORS is long, large stocks, at least in the upper levels of the storage network, are desirable.

- o Shelf life. For packet types with long shelf life, large stocks are feasible, though not necessarily desirable. Packet types with short shelf lives require that stocks be kept small.

- o Availability of storage space. Where storage space is ample, large or small stocks may be kept, depending on other factors. Where space is limited, stocks will have to be kept small.

- o Cost. Where the cost of packets is relatively high, it may be difficult to invest program funds in building up large stocks, particularly if no optimum model for inventory management has been developed. Rather, the combination of strategies appropriate to conditions in each particular country must be identified.

C. Stock Control

A stock control system, that is, the ensemble of procedures such as keeping stock record cards, submitting requisitions, and preparing issue tickets, has two purposes:

- o to provide readily accessible information on consumption and inventory levels for purposes of making management decisions on procurement and distribution of stock;

- o to document the safe storage and movement of supplies, providing an "audit trail" to trace the flow of stock through the storage and distribution system for purposes of identifying points of loss, waste, and delay.

Concerning stock control, the first assessment objective is to determine how effectively existing procedures achieve these purposes. Frequently, a brief checklist will indicate that sound stock control procedures are not followed uniformly throughout a supply system; in these cases it is clear that the purposes cannot be achieved. It is not uncommon, however, to find that, in general, stock control procedures are respected from top to bottom and the stock control system still does not serve its intended purposes. That is, in most storage and clinical facilities, stock record cards will be up to date, requisitions and issue tickets filled out and neatly filed - all this and much more - and still no one at the top will know what is going on within the supply system. The key question is: do the Ministry decision-makers responsible for procuring and delivering stock receive periodic reports that summarize data on consumption inventory levels and losses? This is the information that they must have for effective pipeline management.

A second assessment objective is to consider the type of stock control system that would both serve the needs of an ORT program and be practical for the situation at hand. Under certain circumstances, the distribution and stock control of ORS might be integrated into the regular drug supply systems. Under other circumstances, it may be necessary to develop special procedures.

D. Sale of ORS in the Public Sector

Where sale of ORS within the public sector is contemplated, two additional issues must be considered: accounting and financial management. In general, operating a sales program is more complex than operating a conventional non-cost-recovering supply system. Conventional systems may be operated in a satisfactory manner with accounting procedures aimed simply at budgetary control. This means that a sum of money is allocated for supplies at the beginning of the fiscal year, and, as this money is spent, expenditures are successively subtracted from the balances. There are no revenues of which to keep track. To properly manage a cost-recovery supply system - a sales program - a more complex system that produces both a balance sheet and income statement is required. Managers must be able to periodically evaluate both incomes and expenditures in order to guide sales programs towards their financial objectives.

It is necessary to consider precisely what the most appropriate financial objectives for an ORS sales program should be. Depending on local circumstances, there is a range of alternatives which include recovering any of the following combinations of costs:

- o all costs, including repayment of capital investment;
- o ORS acquisition costs and operating costs only;
- o ORS acquisition costs, with the Ministry of Health continuing to support the operation expenses;
- o partial cost of ORS;
- o any of the above combinations of costs, plus a surplus for supporting community health workers, health centers, or other parts of the health system.

In a particular country, the alternative that makes the most sense will depend on the personnel and financial resources that are available locally. Concerning the sale of ORS, the principal assessment objective is to determine the extent to which a Ministry (or other sponsoring agency) has the capacity to keep the necessary accounts at each level of the distribution system and to manage funds and revenues for the achievement of stated financial goals. If the Ministry has existing cost-recovering programs such as collecting fees for consultations or laboratory services, these should be examined critically. Another indication of the potential for operating a sales program is the quality of management in the existing drug supply system. A Ministry that has weak management in this area is unlikely to be successful in managing an ORS sales program unless changes can be made and minimum standards of performance can be met.

11.2.4 Sale of ORS in the Private Commercial Sector

As described above, the general focus of assessment for public-sector ORS distribution is on the mechanics of supply system management. Implementation of ORT programs within a Ministry of Health or other government agency assumes that ORS will flow through a supply system over which the program managers have some degree of direct influence.

For the private commercial sector, the focus of assessment is quite different. In a sense, distribution of ORS through commercial channels is sought precisely because this approach does not require direct management. As noted, in most countries the population served by the wholesale/retail network is much greater than the population served by the public sector health service network. For the private commercial sector, the focus of assessment is on the feasibility of distributing ORS through the wholesale/retail network, thereby extending the benefits of ORT much further than would be possible using public-sector resources.

With respect to the private commercial sector, the first assessment objective is to identify components of a country's wholesale/retail network that are suitable channels of distribution for ORS. These may include retail pharmacies or shops and stands of many types through which consumer products are distributed for ORS on a national or regional basis. They may be traditional or modern, but there is one underlying criterion for suitability: they must be frequented by consumers of modest means and especially by women.

A second assessment objective is to obtain an estimate of the proportion of the population that is covered by these outlets. This requires attempting to determine both the numbers and geographical distribution of retail outlets from urban/rural and regional perspectives.

Assuming that potentially suitable commercial outlets do exist and that they reach a significant portion of the population beyond that covered by the public sector's health service network, there is a third assessment objective: to determine whether or not sufficient incentives exist or could be created to allow ORS to be reliably and extensively distributed through these outlets. Principally, this centers on the question of profits that wholesalers and retailers could expect to make from the sale of ORS. Since treatment of infant dehydration at minimum cost is part of the raison d'etre of ORT, it is presumed that the per-packet retail price must be kept low. This means that, to make enough money from ORS to warrant stocking the

product, wholesalers and retailers must be able to expect a reasonably high volume of sales. Although in most cases final determination of the commercial feasibility of ORS sales will have to await marketing studies, it is useful at the assessment stage to make a first approximation with illustrative modeling of price structures, sales volumes, and projected returns.

Since in most countries there is not a great demand for ORS, the feasibility of commercial distribution depends on whether or not a sufficiently great demand can be created through educational/mass communication interventions. For this reason, a final assessment objective is to inventory the resources available locally for mass communication (radio, TV, newspapers) and for commercial advertising.

11.2.5 Coordinated Planning

In summary, the supply system manager must match ORS supply to ORS demand and realistically assess whether the logistics system can perform well enough to provide the needed supplies. In accomplishing these tasks, it is essential that supply managers work closely with other individuals involved in planning ORT programs. Examples of such linkages are:

- o with planners. Overall promotional and distribution strategies can have a profound impact on the demand for ORS, as illustrated earlier.

- o with the medical profession. The acceptance of ORS can reduce need for IV supplies and increase ORS demand.

- o with local production planners. Local products may have shorter shelf lives, which can affect assumptions about ORS turnover. Ability to support "cottage-type" production at a level of over 50,000 packets per year, semi-automatic industrial-type production at a level over 2 million packets per year, and automated production for over 4 million packets per year, provides a variety of local opportunities for decentralized production. Finally, experience to date suggests that delays in opening of local production facilities can be 12 to 18 months, making it necessary for supply managers to consider a generous overlap in stock levels between existing supply sources and anticipated local production.

- o with management information specialists (MIS). In light of the uncertainties in ORS demand, MIS systems must help to track utilization of ORS from the start of a new program. Timely and accurate adjustment of supply requirements depends on having reliable consumption data.

ORS SUPPLY MANAGEMENT

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 11.

I. Strategic Orientation

A. ORS Supply System

1. Is ORS available in the country at the present time? If available, how is it distributed? Through government health services, PVOs, commercial pharmacies, and shops?

2. What are the quantities of ORS distributed through these different channels?

3. What products are available? What are their prices per litre of mixed solution?

4. Is the private sector wholesale/retail network a potential for distribution of ORS? How extensively does this network cover the country (or selected regions)?

5. What are the major weak spots in providing ORT/supplying ORS?

    a. Lack of interest and demand by health workers and patients?
    b. Lack of source of supply?
    c. Poorly functioning Ministry of Health supply system?
    d. Lack of interest and demand in the private commercial sector?
    e. Limited coverage of wholesale/retail network?

6. Are there other obstacles to the sale of ORS in the public sector? Poorly functioning supply system? Lack of management capacity? Unfavorable profit structure and/or active promotion of diarrhea "remedies"?

B. Local Production

1. Is ORS produced within the country? If so, do the products available conform to the approved WHO formulas for ORS? If not, are there pharmaceutical or other manufacturers capable of undertaking production?

2. Is ORS produced within the region? Are any difficulties in procuring the product generally recognized?

3. Are there statutory obstacles to local production of ORS?

4. If drugs are not sold in the public sector, are there any legal constraints to doing so? To selling ORS?

C. Policies and Strategies

1. Does the Ministry of Health have an active ORT program? How extensively is ORS distributed within the Ministry's health service network?

2. What is the Ministry of Health's pharmaceutical supply budget? Of this amount, how much is spent on ORS?

3. Does the Ministry of Health dispense drugs without charge to patients, or does it sell them?

D. Planning and Organization

1. What is the estimated proportion of the population covered by the health service network?

II. Determining Needs

A. Planning and Organization

1. How does the Ministry of Health (or other programs) presently determine what its ORS needs are? On the basis of what criteria are these needs determined?

2. Is information available on the following:

   a. Demographic composition of the population: sex and age groupings?
   b. Morbidity and mortality rates for diarrheal diseases?
   c. Types and frequency of diagnoses made at different categories of health services delivery facilities? By different categories of health care providers?
   d. Past consumption of ORS and other products used to treat diarrheal diseases?

3. Where any of these types of information are available, how complete is it? How is it organized and filed? Are periodic summaries of any of this information produced?

4. In light of the types of information available, which of these approaches would be most appropriate? Population-based estimates that forecast needs generously? Service- or consumption-based estimates that forecast needs more modestly?

III. Distribution in the Public Sector

A. Procurement

1. Within the Ministry of Health, what bureau/person is responsible for assuring procurement of ORS? How is it procured? Donated? Local purchase? Foreign purchase?

2. For purchases, what method is used? Direct purchase? Negotiated purchase? Tender?

3. How are procurements carried out? For purchases, who is responsible for:

    a. Forecasting needs
    b. Locating suppliers
    c. Selecting suppliers
    d. Assuring payment?

4. How long does it take to complete the steps in the purchasing process? Are there any notable bottlenecks or problems?

5. Apply questions 3 and 4 to procurement donation.

6. For purchases of ORS, what are the most recent prices and terms? (C & F, CIF, etc.)

7. Who are the current suppliers of ORS? How reliable are these suppliers in terms of both services and quality? Are there recurrent problems with late deliveries, failures to deliver, packaging, labeling, documentation?

8. What role do local agents play?

9. Are there significant delays in port clearing? If there are delays, are they due to:

    a. Shipper problems such as failure to notify that supplies were sent or failure to provide documents?
    b. Customs and port problems?

10. Do losses occur in port due to heat exposure, theft, inadequate storage, or inadequate security?

B. Storage and Transport

1. What is the structure of the storage and distribution system? How many levels does the system have? For example, central warehouse, regional warehouses, district depots, and clinical facilities? What is the geographical distribution of all of these points?

2. Does the quality and quantity of space available at each level of the system conform to the standards in the WHO guidelines for storage of ORS?

3. What modes of transportation are currently used for ORS, drugs, and medical supplies? Is it mostly Ministry of Health, other government agencies, or commercial transport?

4. How reliable are current transport arrangements?

5. If government vehicles, are there problems with numbers of vehicles, fuel and lubricants, maintenance, spare parts, availability of trained mechanics?

6. If commercial transport, are there any problems with the quality of service, the Ministry's capacity to pay?

7. Are there major unsolved transport problems such as seasonably impassable roads? Pilferage?

C. Inventory Management Strategies

1. What are the schedules of deliveries between different levels and points of the storage and distribution system?

2. Are stocks generally adequate to meet needs? Apply this question to drugs and medical supplies if ORS is not being distributed.

3. How much stock is kept on hand at each level? How many months' supply? How is this determined?

4. How frequent are shortages and stockouts? Where in the system do they occur? How is this determined?

5. Who determines delivery schedules and stocking practices? How?

D. Stock Control

1. Do inventory records (stock record cards, requisitions, issue tickets) exist at each level where ORS or drugs are stored? Are these records systematically filed? Do they appear to be adequate?

2. Do managers/decision-makers at each level of the system receive periodic reports on consumption, stock levels, and losses?

3. If such reports are prepared, do the managers/decision-makers use them to make decisions concerning procurement, distribution, or redistribution of stock?

E. Management of the Service Delivery System

1. What is the structure of the ORS or drug pipeline? What is its length?

2. Are there notable points of difficulty or delay? List them.

3. Within the Ministry's supply system, is distribution of ORS or drugs centrally managed through a vertical program, decentralized, or coordinated in some other way?

4. Are existing manpower and physical resources efficiently used and well coordinated? If there are notable problems of coordination, list them.

5. Is there an established table of organization and lines of authority for distribution activities?

6. How efficient is communication within the country? Is the postal system reliable? Telephones? 2-way radios?

7. How effective is the current staff at each level in supply system functions such as record keeping, delivery scheduling, equipment maintenance, quality assurance, and warehouse and storeroom housekeeping?

8. If there are notable lapses in the performance of any of these functions, to what may they be attributed? Shortage of personnel? Lack of supervision, training, or motivation?

9. What types of training exist or have been carried out for supply systems management?

10. Based on information gathered in the assessment, what combination of pipeline structure, length, and inventory management strategies would be most appropriate for a public sector ORS program in this country?

11. Are temperature and/or humidity at any intermediate stocking points extremely high for extensive periods?

IV. Sales in the Private Commercial Sector

A. Private-Sector Delivery Systems

1. Is there a network of commercial pharmacies? If so, is ORS currently being distributed and sold through it?

2. Are there other types of retail outlets that would be suitable for distribution and sales of ORS? What types?

3. How extensively do these retail outlets cover the country (or target region)? What are their numbers and geographical distribution? How extensively do these outlets serve the rural populations?

4. How much ORS could be sold monthly at these different types of retail outlets? What are the likely wholesale and retail prices?

5. Given these preliminary estimates of volume of sales and prices, how much profit monthly could the different types of retail outlets expect to earn?

6. What is the extent of promotional activity by "detail men" (drug salesmen)? Do they visit pharmacists as well as physicians? Whom are they employed by?

7. Do anti-diarrheal drugs represent a significant profit to pharmacists?

B. Education of the Public

1. What educational/mass communications resources exist within the country that could be used for increasing demand for ORS? School systems? Radio? TV? Newspapers? Are there local advertising and/or marketing firms?

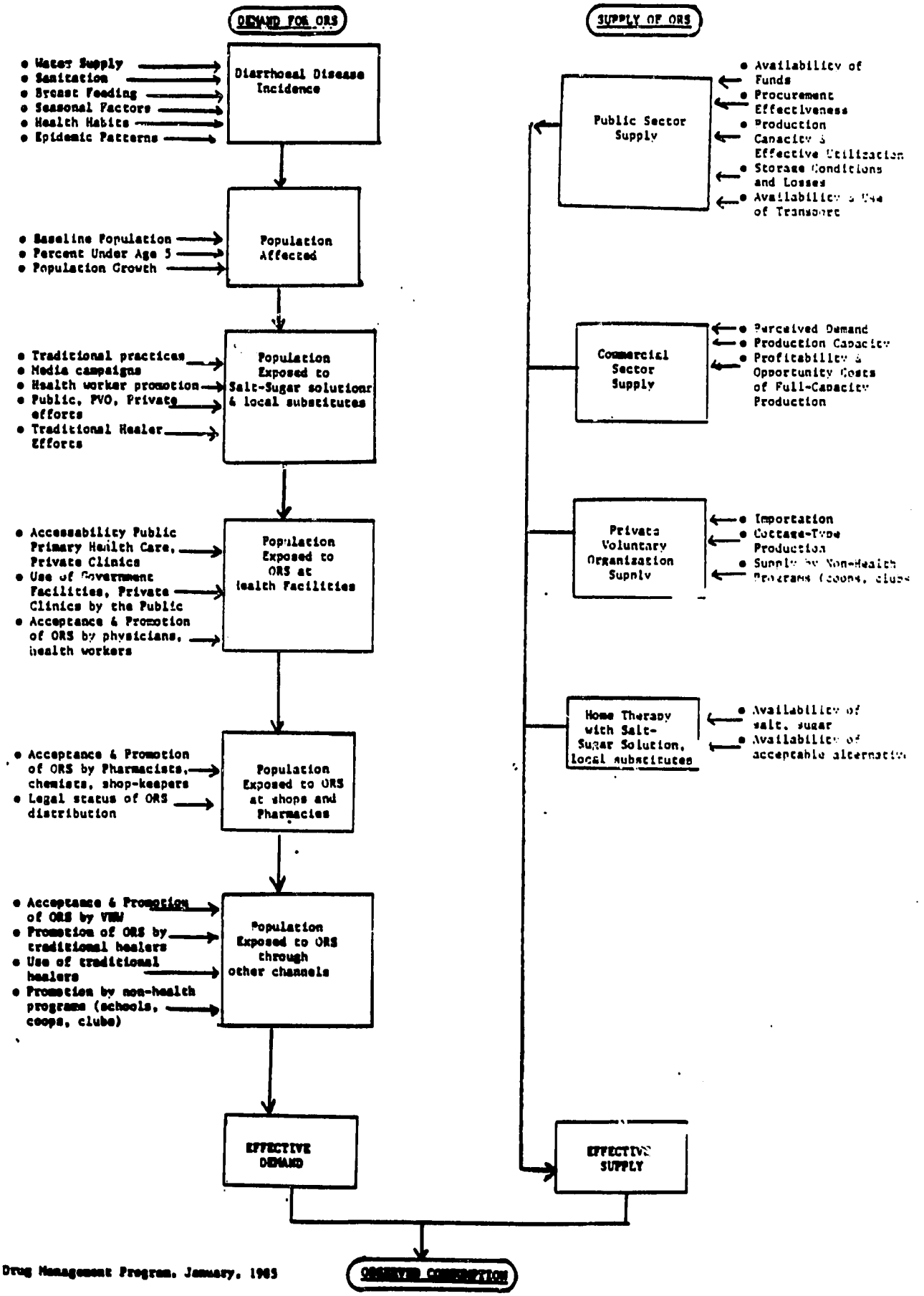
C. Planning of Commercial Sales Programs

1. In light of existing resources, do marketing campaigns for ORS seem feasible?

D. Planning and Organization; Laws and Regulations

1. What government agencies are responsible for marketing pharmaceutical products? What are the relevant regulations? Are there any statutory obstacles to marketing ORS as a non-drug item?

ANNEX I Model for Planning ORS Requirements



[illegible] Drug Management Program, January, 1985

ANNEX II: RELATIONSHIP BETWEEN PROGRAM INPUTS AND ORS CONSUMPTION IN EGYPT

STUDY CELL	NUMBER OF CHILDREN IN CELL	PROGRAM INPUTS	"ORALYTE" PACKETS CONSUMED PER 100 CHILDREN MONTHS
Control-1	4,400	Unchanged (present) Governmental Health Services. Ministry-of-Health-Introduced ORT Program carried out since 1977.	0.7
Control-2	6,018	Health facility staff made aware of importance and method of ORT. "Oralyte" made available to all facilities in unlimited quantities.	3.0
"Oralyte" home distributed	6,875	"Oralyte" distributed to all households on monthly basis. Health education in homes and public places (e.g. mosques) at regular intervals. "Oralyte" available ad-lib to home visiting nurses and at facilities.	56.5
"Oralyte" through commercial channels	7,073	"Oralyte" available at all village shops and pharmacies at subsidized price. Remainder of inputs as above.	21.0
Home prepared sucrose/ salt hydration fluid	2,023	Hydration fluid prepared by mothers from home supplies of sugar and salt. Remainder of inputs as above	6.0
Prepackaged sucrose/ salt ORS home distr.	2,461	Sucrose/salt commercially premixed, prepackaged and distributed to all homes on monthly basis. Remainder of inputs as above.	4.3 (86.8)*

*The number in backets denotes consumption of prepackaged sucrose/salt ORS.

ANNEX III: ILLUSTRATIVE METHODS FOR ESTIMATING NEEDS

Population-Based Approach

1. Assume a population of one million people living in a "typical" region of the country.

2. Determine the demographic composition of that basic population count. In general, appropriate age groupings are children 0-4 years; children 5-14 years; women aged 15-44 years; men aged 15-44 years; adults over 45 years. This ensures coverage of the high priority maternal/child age group. However, other program priorities may dictate other groupings (e.g., under 1 and 1-4 are common groupings as well). Keep the number of divisions as simple as possible; the larger the number of age groups, the more complex is the work that needs to be done.

3. Determine the morbidity/mortality rates for the specified age groups using the data sources discussed above, and convert into estimated attack rates for each disease.

4. Calculate the frequency of occurrence of each disease in a year's time for the population of one million. For example, suppose data show that children aged 0-4 average 3 severe attacks of diarrhea per year, and the population pyramid shows the population of one million has 160,000 children aged 0-4, then the number of diarrhea attacks that need treatment for this age group are 160,000 x 3, or 480,000. Similar calculation should be repeated for each of the other high priority health problems.

5. Using these specific morbidity/mortality rates, estimate the type and frequency of treatment required for each health problem. For example, in order to treat diarrhea, estimates could be made that 90% of cases can be treated by oral rehydration and 10% of cases require intravenous fluids. In addition, 5% of cases may require metronidazole for acute amoebiasis, and 10% may require antibiotics for bacillary dysentery or cholera. Obviously, the exact percentages depend on the epidemiology of the area. As previously mentioned, wide regional variations make this process cumbersome, since individual calculations need to be done for each region.

6. Use the standard norms for treatment previously developed to calculate the quantities of each dosage of drug needed to treat each disease. For our example of diarrheal disease, if the treatment norms estimate 2 liters of oral rehydration fluid are required for each case of severe diarrhea, and the salts are packaged in packets that reconstitute to make

one liter, then 864,000 packets of oral rehydration salts will be required to treat all cases of severe diarrhea in children age 0-4 in a population of one million people (160,000 children aged 0-4 x 3 severe attacks of diarrhea/year x 2 packs of oral salts/attack x .90 proportion of diarrhea attacks treatable by oral salts = 864,000).

These calculations need to be repeated for each treatment regimen for each disease. It is easier to calculate these numbers using the combined disease rates for all age groups, but individual age group breakdowns can be done if one is willing to put in the effort. This is especially helpful if, as usually happens, resource limitations prevent purchasing enough drugs for all age groups and the groups must be prioritized. It will be helpful to know what quantities each age group will require.

7. Add to the quantities calculated the additional amounts required to fill the pipeline and to cover wastage.

8. Multiply this amount by the number of units of one million population the health program seeks to serve.

Service-Based Approach

1. Review service registers for each type of facility (hospital, health center, health post, etc.) or each type of provider (doctor, nurse, auxiliary, sanitarian, village health worker) and tabulate the frequency of diagnoses for diarrhea. This review should cover an entire year, since seasonal variations (winter/summer or wet/dry) can markedly alter service patterns. Thus, if service records do not exist, it will take a minimum of 1 year's experience to gain enough information to use this method.

2. The norm of treatment for diarrhea in infants and children is 2 packets of ORS.

3. Calculate the quantities of ORS needed on a yearly basis by each type of facility or provider by multiplying the number of cases of diarrhea seen in a year by the 2 packets of ORS required to treat each case.

4. Calculate the total quantity of ORS needed to supply all facilities and/or providers projected by the program. The quantities should be phased to meet the anticipated startup of program activities. That is, if x number of health centers will be completed by year 2, then include the quantity of ORS that they will need in year 1 estimates.

Consumption-Based Approach

1. This approach begins with historic data - an analysis of past patterns of ORS consumption. The first step is always to graph the data. For this method a facility should have records for distribution of ORS; for the program as a whole there should be monthly summaries of supplies dispensed from all outlets.

Another approach is to summarize production and importation records which may be obtained through customs records, import licenses, and Ministry of Commerce data. Whichever records are used, a graph of the data will reveal trends and the extent of monthly variation. If it appears that there is some straight line that fits the data, then draw it in. A plexiglass ruler is probably better than linear regression, because you can more easily use your judgment regarding treatment of spurious data points. Wild data and old data are rejected in fitting the travel line.

2. As a basis for forecasting needs, this procedure makes the assumption that the underlying process will continue unchanged throughout the forecasting period. This may or may not be true. It is worthwhile to make some estimate of variation. For example, one could estimate most likely, optimistic, and pessimistic values for ORS needs. These provide an indication of the degree of confidence that you have in your estimation procedure and provide the necessary information for the calculation of safety stocks. For example, if a regional warehouse dispenses 100,000 packets of ORS during the busiest month of the summer diarrhea season and only 20,000 packets during the slowest month of the year, then these figures represent the limits of confidence. An average estimate of 60,000 ORS packets per month should provide sufficient safety stocks.

ANNEX IV: WHO GUIDELINES FOR STORING ORS

1. Cartons should be stacked in storage facilities so that adequate space is allowed for ventilation and aisles.

   * A standard UNICEF produced carton of ORS contains 50 1-litre packets and weighs about 2.1 kilograms. The carton measures approximately 9.5 x 12 x 37 centimetres, which is 4.2 litres.

   * UNICEF recommends storing ORS in stacks of cartons that are approximately 1 - 1 1/2 metres high. 1,000,000 1-litre packets stacked 1 1/2 metres high require 180 square metres of warehousing, including space for ventilation and aisles. 1,000,000 packets stacked 1 metre high require 270 square metres of warehousing.

2. Temperatures should not exceed 30 C. Above this temperature ORS may melt or turn brown. Avoid storing supplies in facilities with sheet metal roofs exposed directly to the sun without adequate ventilation.

3. Humidity should not exceed 80%. In higher humidities the product is likely to cake.

4. Storage areas should be free of all types of insects and rodents.

5. Regional storage areas should be located in places that will be convenient for subsequent redistribution.

6. Cartons should be arranged to prevent abrasions or punctures by sharp objects.

7. Cartons should be arranged such that identification marks and other labels can be seen.

8. A system of rotation should be carried out such that the oldest ORS (identified by date and batch number) will be used first.

9. ORS should be checked approximately every 3 months to see if the quality remains acceptable. To do this, 1 packet from each batch should be opened to see if it is usable. When ORS has turned brown or has melted or caked, it may be difficult to dissolve. If it can be properly dissolved, it is still effective, is not dangerous, and could be used.

10. Upon receipt, check ORS packets in any boxes that appear to be damaged. Open at least one packet from the top, middle, and bottom of the box to see if the ORS is usable.

ANNEX V: FORMULAS, PACKAGING, AND SHELF LIVES

Although various formulas are possible for the production of ORS, the table below presents the two that have been approved by WHO.*

ORS Bicarbonate*	Grams/Litre	ORS Citrate*	Grams/Litre
Sodium Chloride	3.5	Sodium Chloride	3.5
Sodium Bicarbonate	2.5	Trisodium Citrate	2.9
Potassium Chloride	1.5	Potassium Chloride	1.5
Glucose Anhydrous	20.0	Glucose Anhydrous	20.0

Aluminum foil of a minimum 15 micrometres with double coating - inside layer of 50G/m2 of polyethylene for sealing and outside coat of 12 micrometres of polyester - is the only tested laminate that adequately protects ORS bicarbonate from moisture for 3 years or longer. If aluminum foil is not available, plastic of certain specifications could be used. The shelf life of plastic packages, however, will be shorter. The table below gives estimated shelf lives for different ORS formulas and packaging combinations at 80% humidity, 30 degrees C. temperature.

ORS Formula	Foil Laminate	Polyethylene
Bicarbonate/Anhydrous Glucose*	3+ years	3 months
Bicarbonate/Monohydrous Glucose	6 months	6 months
Citrate/Monohydrous Glucose	1 year	1 year
Bicarbonate/Food Grade Sucrose	6 months	6 months
Citrate/Food Grade Sucrose	6 months	1 year
Citrate/Anhydrous Glucose*	3+ years	2 years

* Because of its better stability and apparently greater efficacy, WHO and UNICEF now recommend that countries use and produce ORS-citrate where feasible. In countries where ORS-citrate is to be produced with semi-automatic equipment and use is to be made of a relatively cheap, locally available packaging material, such as polyethylene, there may be a saving of up to 50% in the cost of packaging material, and 10-20% in the final packet cost. (WHO/CDD/SER/84.7)

CHAPTER 12: MARKETING AND SALE OF ORS

Rajeev Batra
Jean Baker

12.1 INTRODUCTION

Recent trends in overseas economic development have led to an interest in "marketing" certain technologies in developing countries with the goal of making them self-supporting and self-sustaining over the long term. In November 1984 the AID Office of Health, through the PRITECH project, sponsored a workshop which explored the potential of marketing oral rehydration therapy/salts for the treatment of childhood and infant diarrheal dehydration. The workshop brought together specialists in oral rehydration, marketing specialists from universities and private industry, and those with marketing experience in developing countries.* This chapter reflects the conclusions and recommendations of that gathering's working groups, as well as key findings from some of the most important experience to date in the area of the marketing of ORS/ORT.

By way of providing a setting for this chapter, it is necessary to define both marketing and social marketing, since they are not quite the same thing. Marketing may be defined as: "the analysis, planning, implementation, and control of carefully formulated programs designed to bring about voluntary exchanges of values with target markets for the purpose of achieving organizational and programmatic objectives. It relies heavily on designing the organization's offering(s), i.e., products and/or services, in terms of the target markets' needs and desires, and on using effective pricing, communication, and distribution to inform, motivate, and service the markets." Social marketing, then, can be defined as simply a subset of marketing, where the organization's objectives in the particular program are primarily to improve the welfare of the society rather than its own well-being, through increasing the acceptability of a social idea or practice in a target group. In most cases, such as with ORT and contraception, project success requires responses at the individual level with individual benefits. Social marketing utilizes concepts of market segmentation, consumer research, idea configuration, communication, facilitation, incentives, and exchange theory, to maximize target group response.

Within this framework, the importance of consumer attitudes cannot be overemphasized, and viewing the whole process as "marketing" rather than "selling" in order to bring about an "exchange of values" is quintessential.

* PRITECH/AID. "Social Marketing Oral Rehydration Therapy/Solution: A Workshop." Arlington, Virginia, 1-2 November 1984.

12.2 EXPERIENCE TO DATE/LESSONS LEARNED

12.2.1 Summary of PRITECH and Other Relevant Findings

Experience in a number of important country programs indicate that the marketing approach is, indeed, a most valuable tool for ORS/ORT programs, in all their phases. Among the basic principles of that approach, there are several which have emerged from experience as particularly useful. These are:

A. There must be extensive research on consumer beliefs, perceptions, and preferences about infant and childhood diarrhea before any decisions are made on the ORS/ORT product, pricing, advertising, distribution, etc. The customer and existing "competition" (such as more expensive antibiotics, or traditional herbal remedies), must be the starting point for strategy development, not the preconceptions of donor agencies or local ministries. Such research must be ongoing, and be used for program pretesting and modification throughout the life of the program.

B. Consumers are heterogeneous in their beliefs, perceptions, and preferences - across countries, across regions, and across income/education categories within countries. Marketing programs must be developed that recognize and cater to differences across such "segments."

C. It may not be enough to aim promotional efforts at end-users (i.e., consumers or health sector clients) alone: the staff of government health channels, the medical community, Ministry officials, educators, and personnel in the private distribution channels may all need to be convinced about different elements of the ORT/ORS effort. This also requires that all the elements of the "mix" are in place before the program is launched, and that all the elements work with each other in an integrated, synergistic fashion.

D. The marketing approach requires the explicit identification of target markets where ORS/ORT can both do most good and be a viable and productive program at the same time. Often, this may mean selecting target populations where levels of income, distribution infrastructure, etc. indicate that a program can succeed, rather than targeting the "poorest of the poor."

E. The marketing of ORS/ORT is far more complex than the marketing of, for example, branded soap. We are dealing with more profoundly rooted attitudes, and must be concerned with not just purchase but symptom recognition, mixing and administration, and, in some cases, such ancillary issues as hygiene, associated feeding practices, and referral.

12.2.2 Country-Specific Findings

A. Bangladesh

In the last three months of 1983, the Social Marketing Project (SMP) in Bangladesh undertook the test marketing of its branded OR preparation, Orasaline. The primary concern of the test market was to gauge the potential for a well-packaged, attractively-presented product placed at a price that would allow the full cost of its production, promotion, and distribution to be recovered from the consumer. This price was substantially higher than

that of two other locally-produced, comparable products. No mass media promotion was used, and only medical and quasi-medical outlets (pharmacies) were eligible to purchase. No credit was extended, neither wholesalers nor stockists were involved, and an upper limit to the quantity sold per outlet against cash per visit was strictly enforced (to prevent overstocking and hoarding).

Of the entire amount sold during the test market, some 36 percent was sold through re-stocking. In a marketing period of only three months, that percentage was encouraging, as it suggests that product movement from the shelf was beginning to be significant, even without consumer advertising; this, in turn, suggests that there was already substantial awareness of rehydration products and that wider availability and more intensive distribution would lead to more frequent use of the product, even without big education and promotion campaigns. However, a comparison of performance in urban and rural areas confirmed a prior assumption that familiarity with - and therefore use of - a rehydration product vary directly with socio-economic status. Thus, in order to increase use of an OR product in lower socioeconomic groups, where dehydration probably poses a more genuinely mortal threat, a communications campaign is absolutely required, even though it may not appear necessary for the more affluent.

Other important lessons learned were:

- o Pharmacists proved to be important as educators and motivators about ORT, even to the half of the consumers who were educated and who presumably could have gotten such information from the package insert.

- o Great care must be taken to convey accurately even the simplest message.

- o Both suppliers and consumers found Orasaline to be superior to other brands, apparently largely due to flavor; thus, not only can flavor contribute to increased sales, but the finding shows the importance of research into consumer preferences.

In sum, Orasaline appears to be a good product with considerable sales potential, even at a price that is perceived as high by the trade and by consumers, and will be self-sustaining at current prices for the more prosperous segments of the population. Nevertheless, it remains "irrelevant" to the mass need for ORT and will require a mass media campaign and/or government subsidy to reach into the larger, poorer population segments.

B. Egypt

In Egypt a large-scale mass media communications ORS program was conducted, using radio and television commercials to market a low-cost packet of ORS salts. There were six commercials using simulated conversations between a mother and daughter about baby, between mother and doctor, and between a mother and others. The commercials made five key points:

- o "Gaffaf" (dryness) rather than diarrhea itself is the danger;

- o Gaffaf can be prevented by using ORS and continued feeding;
- o ORS is highly effective and medically approved;
- o Effectiveness of ORS is dependent on proper mixing and administration;
- o Diarrhea can be prevented.

In less than a year, tracking surveys revealed both their own centrality in the monitoring and diagnosis of the effectiveness of any marketing approach and the dramatic impact of the mass media campaign itself. At the outset of the campaign, only 32% of the survey sample population had known about the dangers of dehydration; after the campaign, 87% knew. Knowledge of ORS grew from 1.5% to 90%, and ORS users rose from 1% to 82%. The impact of oral rehydration therapy on mortality in Alexandria was reflected in a reduction in diarrhea-related death rates among children under one year from 32% in 1980 to 3% in 1984 and among children one to five from 20% in 1980 to 1% in 1984.

The Egyptian program provided a number of valuable lessons:

- o It is necessary to familiarize government officials with social marketing and its methods and effectiveness.
- o Social marketers must be politicians as well as marketers.
- o Doctors are not trained communicators.
- o A clear ORT-specific campaign must consider who buys ORS and not just how much is bought.
- o A general public message is different from one directed at the elite.
- o Themes and characters must be familiar to the target audience.
- o Mass media can change behavior.
- o Social marketing is different from standard radio and television advertising. It must be a thoroughly integrated effort, reinforced by face-to-face communication with health service deliverers.
- o Care must be taken using professional actors. Mothers are best.
- o Even mass media are not enough if other parts of the campaign are not in place, i.e., if health professionals are not convinced of product effectiveness, if the product is not perceived as suitable by the target audience, or if it is not readily available.

C. Honduras and The Gambia

The Mass Media and Health Practices Project of the Academy for Educational Development applied a public communication approach to diarrheal disease control in Honduras and The Gambia. In Honduras, the Project promoted a locally-produced packet of oral rehydration salts (Litrosol) for use at both home and clinic levels. In The Gambia, a simple sugar-salt solution was promoted for home preparation, and the UNICEF packets were saved for use in health centers. The two countries were chosen explicitly because of their striking differences, in epidemiologic profile, ethnic structure, female literacy, quality and reach of public health services, and media access, in order to compare the usefulness of a simple methodology for a systematic, mediated public communication campaign. The campaign was based on: clear, measurable behavioral objectives; KAP research among target audiences; integration of mass media and face-to-face channels; systematic development and pre-testing of materials development to assure their accuracy, ease of comprehension, attractiveness, and cultural appropriateness; and monitoring and formative evaluation to determine how the campaign was working and what changes might be needed.

After one year of the project in Honduras, 48 percent of women in an evaluation survey sample reported having used Litrosol to treat diarrhea at least once, and recognition of Litrosol as a diarrheal remedy went from zero percent to 93 percent of the population. Of those reporting use, over 90 percent could mix it properly and 60 percent gave the correct recommended daily amount. Mortality monitoring in children under two years showed a 40 percent decrease in deaths involving diarrhea, but not in overall mortality. Institutionalization within the Ministry of Health was good and the project methodology was adapted for use in other MOH projects.

After eight months of the campaign in the Gambia, 66 percent of mothers knew the correct homemade rehydration formula being promoted and 47 percent reported having used it, both from a base of zero at the start of the project. Attendance at mixing contests and distribution of motivational flyers were high. After the second year of the campaign, over 50 percent of mothers reported having given solid foods to their children during diarrheal episodes, a fourfold increase from the beginning of the campaign.

Both projects produced a number of useful lessons:

- Preliminary mortality and morbidity data from Honduras suggest that control of diarrheal disease alone is necessary but not sufficient, and that effective immunization, growth monitoring, and nutrition programs are also needed.

- It is crucial to take into account the health beliefs of Ministry of Health personnel, as well as those of target groups. In Honduras, mothers considered "empacho" an important type of diarrhea, quite distinct from other forms; medical professionals recognized no such distinction, wrote it off as fallacious, and refused to incorporate the concept into the campaign. The result was that a third of diarrhea cases were going untreated with Litrosol. A compromise message was devised that encompassed the professionals' concerns and also addressed the coverage problem: "Litrosol is good for all diarrheas."

- The Honduras experience indicates that there is a pattern of initial fast learning to a very respectable level when a campaign begins, followed by slower gains as time goes by and, in some cases, even attrition. The experience in The Gambia suggests that this varies according to topic: changes in feeding beliefs are most stable and durable, those related to environmental sanitation much less so.

- The usefulness of the print channel is inhibited by low literacy levels (e.g, The Gambia), but heavy reliance on radio-transmitted information can be made to compensate, especially where it can be supplemented with interpersonal interaction.

- In The Gambia, use of ORT was just one component of a general feeding message, appropriate emphasis in a country where malnutrition from chronic diarrhea is as prevalent as dehydration from acute diarrhea. The most important lesson learned was that social marketing techniques can succeed even where no specific product is being marketed.

12.2.3 Summary of Constraints

The marketing of ORT is neither simple nor a panacea. In most developing countries, where many people have little or no access to modern health facilities; where rural health posts, if they exist, are staffed by semi-literate paramedics; and where there is little or no access to radio or other mass media, what is the best method for marketing ORT? How does one mount a campaign to teach the mixing of a product which, if not mixed properly, can cause or exacerbate rather than cure illness? How are physicians and other health providers persuaded that such a simple remedy is more effective and health-giving than antibiotics and other antidiarrheal drugs? How does one deal with mothers who traditionally have withheld food from children with diarrhea in the belief that they are giving the system a "rest"? Or overcome a belief that diarrhea is healthy and makes children beautiful? How is a product sold for use at home at the first signs of diarrhea, if a loose bowel movement is not perceived as such, or where money is spent on children's health only if they are perceived as being severely ill? How does one market in environments where consumer incomes, and advertising and distribution "reach" levels are extremely low?

Stated somewhat differently, some of the most important constraints encountered so far in the marketing of ORS/ORT (and, similarly, in the experience of retail sales of contraceptives) are the following:

- Social products are more complex than commercial ones.

- Social products are more controversial than commercial ones.

- Social products are less immediately satisfying to the consumer.

- The audiences for social marketing in developing countries are typically those with fewer resources, that is, time, money, status, and mobility.

- Social programs require spectacular results.

- There is greater resistance to audience research and audience segmentation in social programs.

- Governments are rarely able to maintain the continuity needed to support long-term marketing efforts.

- Social programs have much less control over the delivery system; for example, government intermediaries are not typically motivated by sales incentives.

- Social marketers are asked to teach many things at once, not just focus on the single most important benefit of a new suntan lotion, for example.

- The verification dimension of consumer research (e.g, utilization of contraception, correct administration of ORT) is difficult in the geographical and institutional environments of the most needy populations of the developing world.

- The most needy target populations and areas are the least accessible. At the national level, the most needy countries are characteristically those with neither the political commitment, nor the information, health education, promotion, or private-sector infrastructures to carry out large social marketing programs.

- Marketing works best when people have some money to spend and works worst with people who do not. In determining population segments for focusing marketing efforts, unless there is a continuous flow of subsidies, segmentation will require elimination of those who are most in need of services. Access to effective communications is a necessity for running an effective marketing program and such communications most of the time do not reach very deeply into rural areas.

- The legal and jurisdictional complications of social marketing programs are considerable. These include such issues as host-country import duties and restrictions, commercial activities of non-profit organizations, registration of drugs and other health products, registration of brand names, packaging requirements, limits on maximum and minimum profit margins, advertising restrictions, distribution restrictions, competitor grievances, sub-contractor guidelines, flow of funds between organizations, taxes, continuity, etc. These issues are addressed in detail later in this chapter and in other chapters of this Manual.

12.2.4 Summary of Options

Since marketing strategies are only effective if they achieve organizational (e.g., societal) objectives, decisions about individual tactics and overall success must be dependent upon a) careful definition - preferably quantification - of objectives; b) careful testing of program strategies and tactics to see whether they are likely to achieve short-run program objectives; and c) careful monitoring of program accomplishments to see whether they are achieving longer-run objectives.

Since marketing and sale of ORS/ORT must be so situationally responsive, the design of program alternatives will vary according to the fundamental policy option(s) adopted by the country in question and by the component public and private entities actually or potentially engaged in ORS/ORT programs. These options are discussed in detail in Chapter 4 and their combined configuration will in large measure be determining of the market strategy(ies) devised. Thus, we will reiterate them briefly here. They are:

- To promote ORT alone or ORT within a framework of child survival and other CDD strategies.
- To encourage the use of packets only, home-based solutions only, or a mix of both.
- To provide ORT through the MOH delivery system only or through multiple delivery systems.
- To encourage local production, imports, or a mix of both.
- To foster use of the WHO formulation only or WHO plus others.
- To distribute ORS through a single-channel or multiple-channel system.
- To declare ORS as an ethical, OTC, or food product.
- To distribute free packets or to provide subsidized, controlled, or market pricing.
- To legislate one kind of packaging and a single product or to allow multiple packaging and products.
- To seek medical society and non-government support or to rely only on the public sector.

The traditional strategy encountered so far has been characterized as dominated by the public sector and MOH; facility-based; provider- and system-centered; packet-oriented; and demand-dependent. The commercial strategy in place in many countries where the commercial sector is selling ORS with limited contact with the government may be characterized as private-sector dominant; pharmacy- and/or retail store-based; consumer-oriented; packet-oriented; and demand-creating. Because it has consistently yielded the best results in the most successful ORT programs to date, PRITECH generally advocates a mixed multi-system strategy which may be

characterized as MOH-coordinated and family-centered. It emphasizes public education, relying on mass media, health providers, and non-health providers (community workers, teachers, etc.) who work in targeted communities. It is inclusive of all major sources of care (public- and private-sector health service delivery systems, including individual practitioners); encompasses homemade solutions, packets, and appropriate feeding practices; and is demand-creating.

Once the overall national strategy has been evolved, the determination of marketing options can occur within two sets of parameters. The first have more to do with communications per se, the second are more precisely tied to commercial marketing considerations. Among the first group are the following (see Chapter 9 for detailed discussion):

- o Audience: demand creation and/or supply reinforcement?
- o Channels: public and/or private?
- o Messages: ORT and what else?
- o Change strategies: what mix?

Among the second group of parameters which will structure the marketing approach will be those which follow in the discussion of "Probable Principal Issues," namely: Potential Target Markets and Segments; Consumer Behavior; Market Research and Pretesting; Products and Packaging; Distribution and Sales; Pricing; Information, Education, Communication, and Advertising; and Evaluation.

12.3 PROBABLE PRINCIPAL ISSUES

A. Potential Target Markets and Segments

The target markets quite naturally include children under five, their mothers, other child-care providers and, in fact, the family as a whole. It will be necessary to do research to find out who in the household is the source of information regarding medicines to take, who does actual buying, etc. Other important target populations who often serve as channels for information about ORT are certain segments of the educational system (teachers in primary and secondary schools, extension workers, etc.). However, further definitions are required of target households in terms of income, geographical location, education, and other demographic variables. Delimiting such boundaries may involve some painful choices, as discussed earlier, but is essential before decisions can be made on pricing, advertising media, distribution, etc.

A most important segment of the population for the success of ORT programs is the health infrastructure, ranging from Ministry of Health officials to physicians, community health workers, primary health centers (PHCs), pharmacists, and other potential distributors of ORS/ORT. A large part of the health establishment in many parts of the developing world may well need to be "sold" on the idea of ORT because of their traditional dependence upon antibiotics and other antidiarrheal drugs. And, if a decision is made to

distribute ORS through such private distribution channels as food and grocery outlets or pharmacies, it is possible that the members of these channels will also constitute a target market for certain promotional and educational efforts.

Within the consumer target markets defined above, there will be different kinds of consumers, with different beliefs about medication for infant diarrheas, different preferences for ORS products, different shopping patterns, etc. It is crucial to recognize such heterogeneity and how it may generate different market segments, since the optimal marketing program for ORS may well have to account for such differences in beliefs, perceptions, and preferences.

Very often, such differences arise out of differing levels of education, income, and urbanization. For example, for a segment of urban, middle-class consumers who have reasonably high levels of education and income and who are familiar with the "modern" medical system, the most appropriate product may be ORS tablets, foil wrapped, distributed in pharmacies, priced near or just below the prices of competing antibiotics. On the other hand, for a contrasting segment of rural, low-income, low-education consumers who are used to taking traditional, herbal medicines, who do not visit pharmacies but do shop at food and grocery outlets, the most appropriate ORS product may be one that is packaged to resemble traditional products, is distributed through food and grocery outlets, and is priced much lower. It is crucial to recognize such segment differences - through research - and to adapt one's marketing efforts appropriately.

B. Consumer Behavior

Consumer preferences and behavior will also constitute the starting point for subsequent decisions about pricing, advertising themes, media selection and use, selection of distribution channels, appropriate product form and packaging, and so forth. Consumer behavior will differ in different markets, but there are some quite basic issues that are likely to arise across the board. These are expressed in the form of questions in the Assessment Checklist provided at the end of this chapter.

C. Market Research

As indicated above, each campaign will need its own target population research. Such marketing research would typically take the following steps. First, about eight to ten purchasers would be brought together in a "focus group" and asked to talk about their perceptions and behaviors related to infant/child diarrheas, as well as about their beliefs, knowledge, attitudes toward ORS, and the factors influencing purchasing. Such information would then be used to design a formal consumer survey; the resulting information would then be used in making initial marketing decisions, subsequently pretested among selected consumers or in limited test markets. The basic question would be: is the selected product form, or price, or advertising copy, going to achieve intended levels and kinds of response? If not, changes can be made before actual implementation. After the program is off the ground, periodic surveys are conducted to determine how different target

variables (e.g., awareness about ORS/ORT, favorable or unfavorable attitudes, actual usage, etc.) are changing over time. As in the case of the Egypt project described earlier, such tracking provides clues to potential problems and opportunities and permits ongoing modifications.

D. Products and Packaging

The most fundamental issue here is the basic ORS product form to be adopted. The relative advantages of homemade solutions, standard packaged formulas, and pre-mixed solutions must be weighed, and this may well occur at the policy level. Homemade solutions are the cheapest and most readily available to consumers. However, these advantages are offset by the potential for inaccurate or even dangerous errors in mixing proportions. Some users may have, for a variety of reasons, more confidence in a premixed or packaged product; however, all things being equal, these may be expected to be more costly.

If a middle-of-the-road option is chosen, i.e., packages to be mixed at home, decisions must be made about packaging. There are many ORS product forms available, and there is considerable debate about the most appropriate and safest presentation. Some experts recommend the current WHO formula, regardless of manufacturer; they argue that, in the light of the volume of need, the numerous constraints to reaching the poorest populations, and safety issues (e.g., the risks of overhydrating a child with a flavored product, a child mistaking a tablet for candy, etc.), the logical product for general distribution is that which is cheapest and most effective. They urge that this be packaged in the least costly material that would protect the product on the shelf longest, with graphic instructions for presumably non-literate consumers. Packet size would conform to the most generally-used container in the target area. A central issue in this marketing area and, in fact, for the entire subject of social marketing of ORS, is this question of variable offerings. An importantly large group of marketing experts disagrees with the strategy of a single product in a single form. They urge that the real cost that should be calculated is the total produced not solely by manufacturing but by marketing the product; thus, the optimal product is that which is not only the cheapest to manufacture and package but also the cheapest to market, that is, the product which the relevant consumer segments are most likely to try. From this perspective, sterile tablets may be seen as more "modern" and appeal to an urban population; effervescent formulations may be thought to "clear the system" and tried by consumers who prefer such a benefit; colors and additives may be used to make the ORS powder mimic traditional remedies and thereby appeal to segments who will only believe in a herbal, traditional product.

Consequently, these marketing experts propose variety in packaging, a choice among premixed liquid and tablets in addition to powder, and consideration of products with added flavor, color, and effervescence to respond to the range of existing consumer perceptions about anti-diarrhea products (what will and won't "work"). To pursue this option, it becomes absolutely mandatory to do initial research into those product forms in which targeted consumer segments are most likely to believe, and then develop a product and packaging which are maximally consistent with that "positioning."

Such experts also argue that more than one product form may be marketed at the same time, as long as each is aimed at different segments and through different distribution channels. In fact, products may even be variously priced for different segments; the more expensive offerings may be expected to pay for themselves and the profits used to subsidize the cost of producing the less expensive version for the poorer segments. Their fundamental theory is that customers are more willing to try a product if they have a choice; however, they also recognize the potential confusion of a campaign that promotes too many products. Marketing options are also somewhat limited by the fact that the product itself is more or less fixed, that is, there is not a wide range of possibilities in terms of alternative formulations that might provide some kind of marketing attraction. Thus, product variations such as color, flavoring, effervescence, naming, and packaging become extremely important.

E. Distribution and Sales

As mentioned earlier, distribution issues become crucial in ORS marketing to low-income, less-educated, rural consumers because such consumers are difficult to reach and motivate through advertising alone. Thus, local retail channels have real influence in getting such consumers to buy and use new products, and use them correctly. Major attention thus needs to be given to distribution issues.

There are three principal issues in the distribution area: selecting appropriate channels; motivating them; and maximizing their effectiveness.

1. Selecting Channels: There are three broad options, which could be used singly or in combination: distributing through primary health centers (PCHs) and official governmental health channels; distributing through private distribution channels, but pharmacies only; and distributing through such extensive private channels as food/grocery stores. The major criteria in deciding among them should be (1) the number of people in the target segment who can be reached through the channel and (2) the costs of inducing the channel to stock the product (through trade margins, etc.) and of servicing it through a sales force.

PHCs are the channel which seem most appealing at first blush: since ORS/ORT would be "piggybacked" onto an existing channel, the incremental economic costs of this channel would be low. However, the number of people reached on a regular basis might also be lower than could be reached through private distribution channels. Since urban, high-income consumers usually buy their medicines at pharmacies, that distribution channel seems appropriate for that segment.

Pharmacy distribution offers other potential problems. First, the penetration of pharmacies into rural, low-income areas is usually limited. Second, pharmacies usually require higher trade margins than are required by food and grocery stores, raising consumer prices. Third, in a pharmacy setting, ORS products will have to compete with the wide array of products (more than 50) on the market to treat diarrhea, e.g., antibiotics, antimotility drugs, kaolin, and others. (This variety has substantial implications not only for distribution but also for product and package selection and for the information to be communicated to a wide audience.) These latter products are more expensive, have a substantial profit margin and are therefore more

attractive from the pharmacist's point of view. And, at least initially, the pharmacist would have to explain to the customer why ORS is superior and how to use it. Thus, in addition to making less money, the selling of the product takes more time. All things being equal, the incentive for the pharmacist becomes primarily social, unless other types of incentives can be devised.

In view of these limitations to pharmacy distribution, broader distribution of ORS through food and grocery channels ought to be considered. These channels have the widest reach and lowest margins, since they tend to deal with high turnover items. Such distribution would remove ORS from competition with other drugs and place it where consumer traffic is already heavy. It would also allow trade promotions and cooperative selling and distribution arrangements with other frequently purchased, branded grocery products. It would, however, eliminate the potential role of the pharmacist in teaching consumers about proper ORS mixing and usage, though the salespeople in these channels could also be trained in such skills.

2. Motivating Channels: If, PHCs are used, the primary motivational issue will probably be one of convincing their staff that ORS/ORT is a cost-efficient, effective treatment, and should be used instead of antibiotics. This will have to be achieved primarily through training, and perhaps the use of organizational incentives and control systems, but might be facilitated by packaging the product in a way that makes it appear "modern" and "scientific" (e.g., as foil-wrapped tablets).

Private distribution channels operate primarily, though by no means exclusively, on economic principles; it is therefore important to understand the economics of profitability for such channels. The total return on investment on any item distributed is the product of (a) the margin per unit multiplied by (b) the number of times per year a unit of that product is sold ("stock turnover"), with this total divided by the amount of money "locked up" in having to stock that product at any point in time. For example, if a retailer has $2 of investment "locked up" in a unit sitting on his shelf, and if he sells 24 such units every year (immediately replacing one that gets sold, from the manufacturer), and if on each unit sold he makes a margin of 50 cents, then his total return is 24 times 50 cents, or $12, on an investment of $2, or 600 percent for the year.

Many implications follow from such analysis. If you distribute a product that moves fast off the shelf, you can get by with giving the trade a lower margin per unit. Conversely, the distribution channels will lose interest in selling your product if your product moves too slowly, considering the unit margin offered. (Pharmacies charge higher margins than food/grocery outlets because the medical products they stock usually move more slowly.) For ORS distribution, the implications are: (a) ORS trade margins must match or exceed those for products that have an equivalent stock turnover; (b) the trade should not be loaded up with ORS before consumer purchases seem likely; (c) actual consumer purchases (and therefore the channel's stock turnover) of ORS should be monitored; (d) the retailer's investment in ORS stocks should be minimized by (1) frequent re-stocking by the ORS sales force (or the sales force of the wholesalers selected) and (2) credit and return arrangements that match or exceed those "normal" for that distribution channel. Also implied is that wholesalers should be chosen who have their own sales forces

to frequently visit and restock retailers, and who have the financial resources to provide enough market credit. Finally, some part of the margin should be through "free unit" offers (e.g., one unit free if you buy a dozen); such arrangements imply that the retailer has to sell that extra unit to realize the margin implicit in this "trade deal," giving him an incentive to liquidate inventory.

Even with such economic incentives in place, it is important to remember that distribution channels are also motivated by non-economic reasons. Relationships with the ORS sales force will be important, so salespeople should be hired who have established relationships and who understand trader psychology. Distribution channels can often be induced to "stock up" on ORS through the use of contests, gifts (given if large quantities are purchased), etc. Appeals can and should be made to their social motives, though these cannot replace economic incentives; good distribution performance can be recognized through certificates, award functions, etc.

3. Maximizing Effectiveness: Whatever distribution channel is selected, the channel can also be used to maximize consumer awareness of ORS and of proper mixing and administration. For this purpose, use should be made of point-of-sale promotional material (posters, calendars, shelf-talkers, etc.) which feature ORS brand names, the importance of using it, proper mixing instructions, etc. In addition, programs should be put into place in which everyone involved in the distribution of ORT is trained in proper mixing and usage, including the sales force, wholesale and retail salespeople, etc. As was apparent from Bangladesh, fewer than ten percent of those buying ORS read package inserts. The role of the trade in communicating such information thus becomes crucial.

4. Sales Force Management: Sales force issues are specialized enough, and "tactical" enough, to preclude detailed discussion here. In brief, however, it would appear that salespeople should be hired who have previous experience in the selling of frequently-purchased packaged food or toiletry products (if the distribution channel is food/grocery outlets), or in the selling of drugs (if pharmacy distribution is chosen). They should be selected on the basis of an understanding of trade psychology, their desire to be superior salespeople, planning skills, etc. Compensation should be some mixture of a base salary with some bonus depending on sales performance. (If they are expected to spend time in training retailers in how ORS should be used, the salary component should be higher.) They should be trained in the handling of trade objections to stocking ORS, in ORS usage and mixing, in field administrative systems, and will require field supervision.

F. Pricing

The issues to be considered in pricing ORS begin with the identification of goals and objectives. Some key questions must be answered before pricing policies can be established. Will the target market sustain and support an oral rehydration line of products, or is it one which can afford oral rehydration salts either at a very low price or not at all? Considering the low incomes of most target consumers, there is an overwhelming need to keep the product affordable by pricing it very cheap. This may be impossible without a subsidy. If such subsidization is not possible, the product may be limited, de facto, to high-income consumers, perhaps living in urban areas.

On the other hand, in considering cost recovery issues, it may be inappropriate to consider a recovery of all ("full") costs, including advertising, administration, etc.; it may be reasonable to set a retail unit price to cover only variable costs, including distribution and trade margins, and cover fixed costs through a subsidy. In any event, these policy issues regarding subsidies need to be dealt with before pricing decisions can really be made. The question is often phrased in terms of self-sufficiency. Where there are local manufacturing facilities or capabilities within a country, there is usually an attempt by donors to have them become self-sustaining. Beyond the manufacturing level, is the objective of program self-sufficiency, or cost-effectiveness, or maximum impact - regardless of cost considerations?

One must then consider several factors in establishing a retail price. The first is costs. The price should, minimally, cover variable costs (the cost of manufacturing, packaging, and distributing the product), and make some contribution to overheads (selling, promoting, advertising) and general administration. While these costs set a "floor" for pricing, perceived consumer value sets a "ceiling." The "value" perceived by a consumer varies by segment, and is linked to products ORS is meant to displace. For many consumers, who associate high price with high quality as far as infant products (or drugs in general) are concerned, a higher-priced ORS product may in fact possess higher "value." Consumers currently paying high prices for competitive remedies, either modern antibiotics or traditional herbal remedies, may also be prepared to pay full recovery prices for ORS products. One may therefore overestimate the sensitivity of consumers to ORS prices, given that the most important concern is obviously to keep prices down. These questions require an investigation of what the market will bear (including the disposable income of the target audience) and the desirability of the product or a variety of products. If some consumers are willing to pay a high price for a particular form of ORS, it is probably desirable to price an appropriate product for that population. In Nepal, for example, experience showed that contraceptives were probably priced too low, and this resulted in a cheap image for them.

There are other considerations with regard to price. Most countries have regulations regarding margins, sometimes fixed by law and sometimes negotiable. Another consideration is price controls. Both will affect working through a commercial distribution system.

Another issue is the need for different products at different prices for different segments of the population. One product is not going to serve everyone (see Section D above). With variety in the market - used as part of an intelligent market segmentation scheme - one can offer a good price to low-income consumers and still create revenues to help pay for program costs by charging a much higher price for a "modern" product aimed at higher-income consumers.

Attention should also be given to differential pricing over time. One may, for example, choose to price low initially, when a high price may discourage initial consumer trial, and raise prices a few years later when the concept of ORS has been sold and consumers are less price-sensitive. On the other hand, experience in Nepal, where there has been a restriction on raising the price of condoms distributed by the CRS program, suggests that increases in

price may need to be built in at the beginning, in view of later restrictions on raising prices. One way to reconcile these two recommendations may be to use very high levels of trade promotions initially, keeping de facto prices low, and then reduce these promotions over time, so that market prices rise while list prices stay unchanged.

In planning pricing, it ought to be remembered that, compared to contraceptive social marketing campaigns, the oral rehydration effort is flexible with respect to the features that can be built into the product. With contraceptives, there is a fixed product or products, and it is the mission of social marketers to market them without any consideration given to meeting consumer-perceived needs. There are several forms of ORS which could be marketed at different prices, with pretests run to determine which of them is preferred by customers. Prices can be tested through questionnaires, by comparing the price with other similar products on the market, and by putting different prices on products in different test markets.

G. Information, Education, Communication, and Advertising

The first issue in the planning of advertising efforts for ORS is to decide on what the objectives and goals are for such mass communication; otherwise, decisions regarding message content and media are impossible. These advertising objectives are, in turn, dependent on the relevant marketing objectives. The marketing objectives of an ORT program are that:

- Everyone in the target group uses ORT;
- They use it when necessary;
- They use it correctly.

There are several conditions necessary for reaching these objectives:

- The target population has to understand that dehydration is life-threatening;
- They need to know that ORT cures dehydration.
- They must see that benefits of using ORT exceeds costs.
- They have to know where to get it.
- They have to have the funds to acquire it.
- They have to know how to use it.
- They have to be satisfied with the results.
- They probably have to have the support of others such as relatives or health workers to use it.

Advertising can play a role in all of these except for satisfaction with results. It will be necessary to set priorities among these and quantify the specific levels of each expected as a result of any advertising campaign, so that campaign success can be assessed.

The next issue will be identification of the target market at which mass communications should be aimed. This will involve the issues discussed earlier under target segment selection. It may be worth considering mass communication campaigns aimed not only at end-users, but also at members of distribution channels to get them to stock ORS, learn proper usage instructions, etc., as well as at government health channels to overcome resistance to ORS use. For example, in Egypt a videotape was made to convince physicians that ORS/ORT was effective, with top pediatricians communicating that message; in Swaziland, special courses were organized for health professionals.

Issues of target market selection will also involve research into household decision-making processes and identification of the "gatekeeper" - the first person turned to when a child is ill. Is it an old auntie, a community health care worker, a family planning worker, a pharmacist, or a physician? These individuals are the keys to the success of a mass communications campaign and both message and media decisions must be aimed at them.

After setting objectives and identifying the target market, issues arise of message strategy: the choice of what ads must say. These decisions must be based on consumer behavior research and on the ORS benefits most important to the target segment, and must be consistent with the product form marketed, as part of the overall "positioning" for ORS. Depending on the segment, ORS might alternatively be advertised as a product that: "clears the system"; "fights dryness"; restores appetite; acts as a "tonic"; is "modern" vs. "traditional." Depending on objectives, ORS advertising might also emphasize:

- Gratification in helping a child ("good mother/responsible parenthood")
- Specifics on mixing, availability, and where to go for further information;
- The point that diarrhea is an important problem; that dehydration is the real danger, but that it can be tackled through ORS; symptom recognition; the recognition of "success" and "relief" (since ORS cures dehydration, not the diarrhea); the need to go to a health facility if the problem persists after two days of treatment;
- Links to other feeding practices (the need to continue breastfeeding and/or other feeding).

It is imprudent to be more specific here: decisions on message strategy must be based on local research. And, since advertising messages must be kept simple, the points above are best covered in different ads, rather than all within one execution.

Another issue in message strategy is ethics. Should messages be based on local beliefs even when these beliefs are not scientifically sound, or should there be an attempt to explain the technical reasons that the product is effective? The "empacho" example given earlier is relevant here. What is the dividing line between adapting a message to the perceptions of the potential users and misusing those perceptions to persuade, albeit with the best of intentions?

As for message executions, local advertising talent should be used to create both suitable and effective messages. Messages may be given a tone of scientific credibility, without being bureaucratic or pedantic; local celebrities can be used to powerful effect, as in Egypt, or authoritative but kindly figures invented, as in Honduras. Messages should be pre-tested through focus groups and/or other techniques.

Issues of setting appropriate media budgets might be moot if there is no flexibility on that score, but consideration should be given to the number of people to be reached and the frequency of exposure deemed appropriate. Once such numbers are generated, it is usually possible to calculate how many advertising exposures are necessary and, from that, what an appropriate budget might be.

Issues of media selection might usefully consider the following, after basic data on the demographic reach of alternatives and their relative costs have been considered:

- Use of radio; outdoor signs and posters; bus panels; cinema; non-traditional settings (public meetings, entertainments, village fairs and events, such as those used in the Gambia, etc.);

- Promotions at point of purchase; instructions regarding ORS use printed on other products (packages) used by the same demographic segments;

- Best seasonality and timing factors (post-harvest, leisure periods, etc.).

- Use of media that can be stored, and referred back to when necessary (e.g., "tear out and keep" newspaper ads on mixing instructions).

- Use of consumer promotions to get initial trial and boost awareness, such as samples distributed either through the mail, inside supplementary products, etc.

Finally, there must be periodic market research (ongoing tracking) to assess whether the campaign is having the desired effects on relevant communication variables (awareness, comprehension, knowledge, attitudes, trial, etc.) as specified in the original objectives and in the relevant time frames.

H. Evaluation

Evaluation procedures will be different for programs promoting a premixed powder from those promoting homemade solutions. Absolute measures, however, will most likely remain the same, i.e., what impact has the program had on the number of cases of childhood diarrhea admitted to hospitals and/or clinics, and ultimately, on infant morbidity and mortality?

If a program is promoting a commercially-available premixed packet of salts, further evaluation would be based on:

- o The percentage of people in the target market who have been made aware through the campaign of the existence of ORS, how it can be used, and where it is available;
- o The percentage of people with a favorable attitude;
- o The percentage of people who report using it correctly (the most important measure).

In addition to consumer information, a complete evaluation of a marketing program would require analysis of trade data from food stores or pharmacies. This would include:

- o The percentage of merchants aware of the availability of ORS;
- o The percentage who stock the product;
- o The percentage who have a favorable attitude toward it;
- o The percentage who know how to mix it;
- o The percentage who are willing to communicate information about it to consumers.

In addition, an inventory tracking system is necessary to learn what percentage of mechants are stocking ORS and how shipments are proceeding from factory to warehouse and beyond. If stock movement is sluggish, retailers will not be satisfied with profit margins and distribution efforts will be threatened.

Finally, the costs of the program should be evaluated in two ways. The first requires a cost management tracking system to determine whether manufacturing and overhead costs are under control. The second requires a method of estimating the cost-effectiveness of the program, i.e., costs per death averted. It can be anticipated that there will be greater cost-effectiveness among those easy-to-reach parts of the population in the urban areas with more education and, one assumes, more willingness to try ORS/ORT. The principal of diminishing returns will probably apply in the cost-effectiveness of reaching those more socioeconomically or geographically distant.

COMMERCIAL SALES

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 12.

I. Potential Target Markets and Segments

A. Who needs ORS/ORT most? Can they afford it?

B. Who are the target audiences? (Children under five, their parents, other child-care providers, etc.)

C. Who recommends treatments? Who buys them?

D. What is known about the target groups? Size? Age? Location? Literacy? Income? Access to media? Access to health care? Shopping habits?

E. What are the local perceptions and beliefs regarding diarrhea in general and childhood diarrhea in particular?

F. Does the segment in question prefer modern medicine? Pharmacy and/or grocery distribution?

G. Does the segment in question prefer a "traditional" product?

H. What are perceptions about actual or potential pricing of ORS?

I. What are the differences across segments regarding the above?

J. How do physicians and other health-care providers perceive ORS/ORT?

K. How do the distribution channels (wholesale, retail) perceive ORS? Will they stock it? What are their economic expectations? Do they need separate product/name, packaging, messages, advertising strategies?

L. What will be required as incentives to stock and display products for retailers? Acceptable credit terms? Best ways to communicate mixing instructions?

II. Consumer Behavior

A. How do consumers recognize symptoms? Are all diarrheas perceived as the same? Equally dangerous?

B. What commercial preparations and home remedies (including digestive ones) are used now? What will ORS displace?

C. What are existing attitudes and levels of knowledge about diarrhea and dehydration? To what extent will they impede or foster acceptance of ORS? Are clients looking for cures for diarrhea or dehydration and what impact does this have on purchase and utilization?

D. How do consumers measure effectiveness of ORT against diarrhea?

E. What other products are bought for these infants? What are relevant beliefs regarding breastfeeding infants who have diarrhea?

G. Who makes the buying decision? Who buys? Where?

H. What are health channel beliefs re ORS/ORT?

I. What are distributor beliefs regarding the profitability of ORS sales?

III. Marketing Research

A. Are there marketing research firms that can be used?

B. Which consumer segments should be researched? In what ways? In what numbers? From what sampling frames/lists? In what regions?

C. Are there other syndicated research services we can use to "track" key data? Ask a few key questions?

D. What secondary research can we use that already exists?

F. What services exist for media data, ad pretesting, etc.?

G. Which selected markets can we use as "test markets"?

IV. Products and Packaging

A. Is there already an ORS product on the market?

B. Is there a need for another one?

C. Is there a local capacity to produce and package ORS? From scratch? What alternative forms (tablet, powders, etc.) can be made or packaged here? At what variable costs?

D. Should ingredients be imported and combined locally?

E. What product/packaging preferences do different segments have? What traditional/modern alternatives may we need to compete with? What are segment preferences regarding flavors, colors, etc.?

F. What size packet is most appropriate for home use? For clinic use? What packages usually represent "standard" measures of liquid capacity?

G. What are requirements regarding shelf life, moisture-proofing, transportation and handling?

H. How can quality be controlled? Mixing proportions kept right?

V. Distribution

A. What distribution networks exist already, public and private?

B. What is their reach among target segments? How many outlets? Rural-urban differences?

C. What trade margins are standard? Credit terms? Frequency of sales force visits? Re-stocking frequency? Standard stock turnover ratios?

D. What warehousing facilities are available? In each territory, who are the best wholesaler candidates for ORS?

E. Do "sales representatives" have to be recruited and trained from scratch, or can we enter into some collaborative arrangements? Is there a group of merchants throughout the country which distributes drugs and other health-related items?

F. Who are the distributors of traditional medicines? Are they a feasible distribution channel? What would it take to train them in the sale and use of ORS?

G. What are the best ways to train the distributors about mixing - and the best ways to have instructions handy: point-of-sale promotional pieces? Calendars? Diaries?

VI. Pricing

A. What are parents willing to spend for treatment of their children? By segment? Is there a price-quality relationship, i.e., are higher prices for such products taken to suggest higher quality?

B. Can ORS be produced at that price? Will it need to be subsidized? What are our variable costs? Allocated fixed costs?

C. What is the difference in the price if ORS is imported? Manufactured locally? If component parts are imported and combined and packaged locally?

D. Will ORS compete with other products already on the market? How? What are their prices?

E. Will the product pay for itself on the market? Only in urban areas? Only among the middle and upper economic groups? Can the price be subsidized for the poor? How wide a distribution will the product need so a company can break even? Make a profit?

F. What government regulations exist regarding trade margins? Price controls? Price-oriented trade deals and incentives?

VII. Information, Education, Communication, and Advertising

A. Are there any public relations, advertising, or other media-oriented commercial firms in the country?

B. What is the nature of current health messages? Through whom or what are they channeled?

C. What specific objectives must we set for ORS advertising? (e.g. 40% awareness in six months)

D. Who are our target segments? Decision-makers in the household?

E. What will our message be? How will we "position" ORS?

F. What media data exist? What media reach our targets most cost-effectively?

G. Does any type of local folk entertainment lend itself to information dissemination?

H. How can we best pre-test our ads? Track their effectiveness over time?

I. Can we enter into joint promotions with other manufacturers, e.g., insert trial packs into other products bought by our target consumers?

VIII. Evaluation

A. What should be evaluated? Product? Campaign? IEC? Impact? Cost-effectiveness?

B. How to measure? Product consumption? Number of cases of diarrhea reported in clinics compared with former number? Changes in childhood morbidity? Mortality?

C. How can we best get data on: percent of target who are aware of ORS, percent who know where to get it, percent who know how to use it correctly, percent who have a favorable attitude, percent actually trying?

D. How can we best get data on percent retailers aware of ORS, percent stocking it, percent who know how to mix it; their stock turnover of ORS, etc?

E. How can we best evaluate the "cost per death averted?"

CHAPTER 13: INFORMATION SYSTEMS FOR ORT PROGRAMS

Henry Elkins
Polly Harrison
Marc Mitchell

13.1 INTRODUCTION

An ORT management information system is the link between planning and reality; it is the way that managers know whether programs which were designed to meet specified targets and objectives are accomplishing these aims, or whether some type of mid-course correction is needed to accommodate unforeseen problems or changes in the operating environment. Because of this central role in an ORT program, considerable time and effort must be given to the design and use of a management information system so that accurate, relevant, and timely information will be produced.

There are five steps in the planning and use of an information system:

- o Determining what data are needed;
- o Collecting the data;
- o Analyzing the data;
- o Evaluating achievements;
- o Taking action in response to evaluation.

Readers will notice that these five steps are identical to those discussed in the WHO/CDD Manual for the Planning and Evaluation of National Diarrhoeal Diseases Control Programmes, (WHO/CDD/SER/81.5 REV.1(1984)), Chapter 3.

A. Determining What Data Are Needed

An information system is a plan for collecting and using data to support managers in their decision-making activities. The first step in designing such a system is deciding what data to collect; this is best accomplished by determining what information is needed to ascertain whether objectives, targets, and sub-targets are being or have been met, and activities carried out as planned.

The answer to this question will be a set of indicators which will be used to plan, monitor, and evaluate an ORT program. Indicators are the central elements of an information system and must be chosen carefully; they must be measurable and accurately represent the field data from which they are derived. Suggested indicators for most aspects of a national ORT program are listed in section 13.2.3: Summary of Options.

B. Collecting the Data

The questions of how, when, and from whom to collect data are difficult for the project planner and manager who are constantly forced to balance the desire for more and better data with the cost in time and money of collecting

those data. Because of the complexity of decisions regarding data collection methodologies, the discussion of this topic is presented in some detail in section 13.2.3.2: Data Collection Methodology: Choosing How to Collect Data

C. Analyzing the Data

Data analysis is the process of transforming raw data collected from the field into information which can be used by the planner or manager for understanding project status or making better decisions. Data analysis is often broken into two distinct stages. The first is data processing, in which data collected from multiple sources and at different times are combined into one general data base. Often data are grouped into differing levels of aggregation for use by different levels of program managers. Thus, for example, information on the number of ORS packets distributed at each distribution point might be presented as individual tallies for the health center manager, regional totals for the regional managers, and national totals for the national director. A second type of data processing is statistical analysis, whereby data are organized according to various statistical methodologies. Examples of this might be the average number of ORS packets distributed at each distribution point during the past month, or the percentage of users of homemade ORS solutions who are mixing it correctly. This sort of statistical analysis may be helpful in allowing the manager to understand and use large quantities of information.

The second stage of data analysis is report generation, in which data that have been processed are presented to planners and managers in an easily-understandable format. The choice of presentation is an important consideration in the analysis of data; different presentations can make the difference between useful information and meaningless data. It is very important that indicators be displayed in a format which facilitates their use for decision-making and gives the reader an immediate picture of the project status. There are several considerations in designing such a format:

- Most people are only able to work with seven items of information at one time. A report which simply lists columns of figures will be very difficult for most managers to interpret.

- The problem most managers have is not too little information but too much. Faced with a 20-page document from each of 15 regions, few managers will have the time or energy to go through and pick out relevant information. Reports should be designed to present a manager what he or she needs to know rather than every piece of data which has been collected.

- Whenever possible, information collected on indicators should be presented side by side with the targets for those indicators, so a manager can see at a glance whether a project is on schedule with its plans.

- Data should be combined with other indicators before being presented, so that the picture makes sense to someone scanning a report. For example, information about families using ORS for an episode of diarrhea might be grouped with information about the

proportion of these families who used it correctly. In the same way, trend lines which show present oerformance compared to past performance, or data comparing different regions at the same time, may clearly point to where the problem areas lie.

- o A picture is worth a thousand words; nowhere is this more true than in reporting data. Information which is reported graphically is faster to read, easier to understand, and often shows relationships not readily apparent in tables or written reports. Field staff can and should be taught to graph trend lines and comparative data for their own use and for reporting purposes; microcumputers can assist in this task where they are available.

D. Evaluating Achievements

The dual purpose of an ORT information system is to inform managers whether they are reaching their targets and objectives and to indicate what corrective actions might be required. The step of evaluating achievements is where this occurs. Having specified, collected, and analyzed appropriate information on which the manager can make decisions, one must now decide whether targets are being met, activities are being performed on schedule, and the program which was planned is actually being implemented. The methodology for this step is detailed in Chapter 3 of the WHO/CDD Manual for the Planning and Evaluation of National Diarrhoeal Diseases Control Programmes, (WHO/CDD/SER/81.5 REV.1(1984)).

E. Taking Action in Response to Evaluation

An information system is of little use if it does not result in appropriate action being taken. Most often, the success of an ORT program is based on the ability of program managers to use new and unexpected information to ensure the achievement of program objectives and targets. While each manager will necessarily develop his or her own way of responding to information, certain underlying principles are helpful:

- o Timely and well-thought-out action supported by appropriate information is a necessary part of any successful ORT program. Taking corrective actions, while sometimes difficult, is a responsibility of the various program managers, and each manager should be expected to fulfill this task.

- o Corrective actions should be taken by the lowest-level manager with the information and authority necessary to make the appropriate decision. In other words, decision-making should be as decentralized as possible.

- o Actions taken should be well documented, so that one can evaluate in the future whether the best course was taken or whether some alternative might have been better. Each new action or program should be built on the foundations of "Experience to Date/Lessons Learned."

13.2 EXPERIENCE TO DATE/LESSONS LEARNED

13.2.1 Summary of PRITECH and Other Relevant Findings

Assessment teams have found that many countries face major obstacles in developing information systems capable of providing timely, relevant and accurate information to program managers. Among these obstacles, some of the most common are described here.

A. The data collected may be difficult to use in taking action to correct problems.

Most information systems used in ORT programs are not designed by those who will use them, but rather evolve from a variety of previous reporting, particularly medical or public health reporting. The result has often been systems that require field staff to process large amounts of data which are useful more for annual reports of health status or medical activity than for program management. Conversely, information which would be helpful to those planning and managing ORT programs may not be collected, or may be delayed or lost amongst voluminous records. A streamlined information system which includes tracking of inputs and outputs, as well as effectiveness data, is required.

B. Managers are often reluctant to revise original plans.

Because of the lack of information about the performance of ORT programs, managers often have difficulty deciding whether changes in the original program plans are needed, and are understandably reluctant to implement changes in mid-course. An information system which measures a program's progress along the way allows a manager to make necessary corrections in the original plan and achieve final objectives.

C. Information is rarely passed down the system to support the field staff.

Feedback to personnel working in the field is crucial in motivating them to continue in an often difficult working environment. Staff like to know that what they are doing has some usefulness both to their superiors and to those they are serving in the villages, towns, and cities. Often, their only means of knowing this is through feedback from their supervisors. The value of this feedback is enhanced significantly when supported by information collected through the system and presented in a way which is understandable to the field worker. An example of this might be a pictorial representation showing that fewer children were dying from dehydration in his or her village since the start of the ORT program.

D. Many program managers have found that service statistics and vital registration are not good measures of morbidity and mortality .

In virtually every country, experience indicates a serious undercount in reporting of diarrhea cases through the service statistics system. A large number of cases are unattended or are attended by private practitioners. Nevertheless, if one assumes that the percentage of undercounting remains constant, service statistics can provide indications of time trends and can alert to epidemics in particular areas of the country. Vital registration

systems are also not generally useful sources of mortality data for a number of reasons: incomplete registration of deaths; incomplete and inconsistent coding of cause of death and age; lack of a uniform definition of diarrhea; uneven training for those who record the information; and rare availability of verbal autopsies to ascertain the cause of death (e.g., a number of Latin American countries where the most frequently reported cause of death is "ill-defined signs and symptoms").

13.2.2 Summary of Constraints

A. Personnel

Personnel trained and available for information system tasks are generally a scarce resource. The ORT information system may have to compete for the services of these people, either with other information needs, public or private, or with tasks not related to information systems. Such skilled personnel are not only vied for within the health sector but may be sought out by representatives from other sectors as well, including the quasi-public and private sectors (e.g., social security institutes and national census and statistics offices). At the local level, some of the most crucial reporting is in the hands of essentially volunteer workers (e.g., TBAs and CHWs), most of whom typically have problems filling out forms and getting them to the next higher reporting level and many of whom are functionally illiterate. In a country like Honduras, where approximately 78 percent of all births are attended at home, and in any country where a large number of diarrheal ailments are never brought into the public (or even the private) health systems, these workers are crucial to accurate reporting but are not usually adequately supported.

B. Lack of Experience with Information System Design

Few ORT programs have access to systems planners with experience in designing health information systems in their country; indeed, many ORT program planners will find themselves in the forefront of planning information systems for their own country. This means that considerable time and effort will need to be devoted to this design process. Since senior-level managers often have insufficient time to spend on system design, they may delegate the work to junior-level staff and "information specialists" who do not have experience working with a health information system, and do not really understand what it will be used for. The result is likely to be a system which does not provide the necessary information for supporting management decision-making but is too complicated for anyone to alter.

C. Costs

Ultimately, what the information system can collect, transmit, present, and use depends on the relationship between the utility of the information and the costs of obtaining it. However, in real life the relationship is not straightforward, and rationales are not consistent. Thus, expenditures on computer hardware may be treated in somewhat cavalier fashion, partly because of their "high-tech" appeal, and partly because such capital costs are often underwritten by foreign donors. Until recently, the tendency has been to insist on large, centralized, main frame solutions; to be less enthusiastic about smaller, decentralized microcomputer solutions; and to be very

unenthusiastic about simplified, minimalist paper solutions. Investments in complementary (and necessary) human resources development are less eagerly made, since they often imply recurrent costs and an increased training capacity, require a human resource base of being trained to what may sometimes be rather sophisticated levels. The simpler the system, however, the less these constraints will matter.

13.2.3 Summary of Options

13.2.3.1 Indicator Selection: Choosing What Data to Collect

ORT/CDD is one of a family of interventions. As such, and for reasons of economy, the guiding principle is to use a minimum number of standard indicators. The purpose of this approach to health and management information systems is to provide only that information which is truly useful for managers of ORT programs in host countries, international agencies, and non-governmental organizations. Using as standard a set of indicators as possible will permit comparability of inter- and intra-county information and reduce the costs and improve the quality of the data gathered. In selecting indicators (see below), the emphasis should be on usefulness to project managers, simplicity, ease of collection, ability to predict effectiveness and impact, and consistency with indicators collected by WHO and other major programs.

Figure 1 defines specific indicators for each of the twelve categories of information presented above. This list is neither a comprehensive nor minimum set of possible indicators; rather it is a list of the most commonly used indicators for most ORT programs. Program managers will want to review the list and select those indicators which are appropriate to their own program, adding additional ones as required for program components which have not been covered here.

These recommendations are the product of discussions between the PRITECH ORT Task Force, the World Health Organization Control of Diarrhoeal Disease Program, and the US Center for Disease Control. In particular, it follows the recommendations of the WHO/CDD Management Information Systems reporting forms except in selected instances which are enumerated and explained in the sections following the list of indicators.

FIGURE 1
CATEGORY OF INFORMATION BY PURPOSE

Category of Information	Purpose: Planning	Monitoring	Evaluation
A. Population Data			
Total population	X	X	X
Total population less than 5 years	X	X	X
B. The Extent of the Diarrhea Problem			
No. cases of diarrhea in population by age and type	X	X	X
No. cases seen in health services by age and type of diarrhea	X	X	X
Diarrhea morbidity ratio in health services	X	X	-
Age- and cause-specific mortality rates	X	-	X
Diarrhea death ratio	X	X	-
Case Fatality Rate	X	X	X
C. ORS Access			
Proportion of families living within 5 km. of ORS distribution point	X	X	X
Proportion of families with access to sugar/salt solution or other type home mix solution	X	X	-
D. ORS Use Rates by Mothers (including Knowledge & Attitudes)			
Traditional attitudes toward diarrhea	X	-	X
Number and proportion of mothers with knowledge of sugar/salt solution or other type of home mix solution	X	X	X
Number and proportion of mothers with knowledge of ORT	-	X	X
Number and proportion of children ever given ORT	-	X	X
Number and proportion of children with diarrhea in last 2 weeks given ORT	-	X	X
Number and proportion of children with diarrhea in last 2 weeks correctly treated with ORT	-	X	X
E. ORS Supply Management in Public and Private Sectors			
Amount imported, manufactured in period	X	X	X
Current inventory in central, regional warehouses	X	X	X
Amount shipped to regional, district, and local centers in period	-	X	-
Number and location of centers experiencing stockouts in period	-	X	X
Wholesale distribution of ORS packets in the commercial sector	-	X	X
Quantity and names of private voluntary organizations supplied	-	X	-

FIGURE 1: (CONT'T)

Category of Information	Purpose		
	Planning	Monitoring	Evaluati
F. Training (including Supervision)			
No. health workers trained by type of course and personnel (physicians, nurses, pharmacists, traditional healers, village midwife, etc.).....	X	X	X
No. and proportion health workers demonstrating ORT knowledge & skills	-	X	X
No. technical information items prepared and distributed by type of recipient	-	X	X
No. supervisory staff.....	X	X	-
No. units to supervise.....	X	X	X
No. units actually visited	-	X	X
No. units with ORT adequacy.....	-	X	X
G. Knowledge, Attitudes, and Use of ORT by Public and Private Health Providers			
Knowledge adequacy.....	X	X	X
Attitudes toward ORT.....	X	X	X
No. of episodes treated.....	-	X	X
No. of persons treated.....	-	X	X
Percent of cases ages 0-5 given ORT....	X	X	X
Type of diarrhea by type of treatment and outcome.....	X	X	X
H. Public Communications and Education			
Posters distributed.....	-	X	X
Radio spots aired.....	-	X	X
Attendance at meetings.....	-	X	X
I. Research			
No. ongoing projects and expected completion date.....	-	X	-
No. monitored during period.....	-	X	-
J. Cost and Cost-Effectiveness			
Total program cost.....	X	X	X
Amount received.....	-	X	-
Amount expended.....	-	X	-
Balance.....	-	X	-
Proportion of episodes treated with ORT	X	X	X
Deaths averted.....	-	-	X
Cost per episode treated.....	-	X	X
Cost per person treated.....	-	X	X
Cost per death averted.....	-	X	X

A. Population Data

It will be necessary to have a working estimate of the total target population an ORT program is trying to reach, and the proportion of this population which is less than five years old. While census data may be used for an approximation, verification of these data wili be highly desirable when the census is out of date, or is not sufficiently detailed for program requirements.

B. The Extent of the Diarrhea Problem

There are several sets of indicators that are crucial to the planning and evaluation of ORT programs. Foremost among these, primarily because they are the ultimate arbiters of the effectiveness and eventual impact of ORS/ORT interventions, are mortality and morbidity indicators. For planning and evaluation of ORT programs, age- and cause-specific mortality rates are the preferred indicators but, because they are not easy to obtain, most programs must rely on diarrhea-related fatality rates and diarrhea death ratios.

Another indicator available from service data is the diarrhea death ratio: the ratio of diarrhea-related deaths to all deaths. Though potentially useful for program planning, PRITECH does not recommend this ratio for impact assessment, since changes in mortality from other health problems can confound the interpretation of the ratio.

The numbers of diarrhea cases by age and by type of diarrhea, both in the general population and in cases seen by health providers, are useful indicators for program planning and implementation. For example, numerous cases of diarrhea in infants under six months of age might indicate the need for increased emphasis on breastfeeding. A high percentage of chronic or dysenteric cases would indicate a program different from one where cases are predominantly watery. The diarrhea morbidity ratio (diarrhea consultations/total consultations) is valuable for planning and current cost analysis. Like the diarrhea mortality ratio, it is not useful for evaluation of impact because of possible confounding deriving from effects at least putatively attributable to other health interventions.

C. ORS Access

As a basis for program planning and coverage targets, one will need to know what proportion of the population has or will have access to ORS packets and home mix ingredients. This will help in monitoring the growth of the program and in making resource allocation decisions about whether to expand to reach areas previously without access or to focus on areas with access but still not using ORT. Although this differs slightly from the WHO categories for access to ORS packets (C) or access to home mix ingredients (E), the indicators are essentially the same, except that we have eliminated "potential access" in this list.

D. ORS Use Rates by Mothers (Including Knowledge & Attitudes)

Since mothers constitute the first line of therapy for young children, the proportion of mothers who have knowledge of ORT, the proportion of children ever given ORT, the proportion of children given ORT in the past two weeks,

and the proportion of children given ORT correctly are good indicators of program coverage. The choice of a two-week time period is based on studies showing it to be the longest reliable period of recall for this type of information. One may also want to collect information on the number of episodes of diarrhea treated with ORT in the past two weeks as an alternate measure of use rates.

Household sample surveys are the best source of such information, but they require more careful and intensive interviewing than the measures of mortality described above. As part of such a survey, one may also wish to collect detailed treatment histories to ascertain the remedies used, the health providers consulted, and the funds expended. Attitudes toward diarrhea and ORT should be studied as part of such surveys and the results used for designing public communications and educational programs. In addition to surveys for studying attitudes, focus groups are useful mechanisms to elicit local attitudes and beliefs about diarrhea.

This set of indicators differs somewhat from the WHO set in its greater emphasis on types of use (current, ever, correct). The reason for this is that a more detailed understanding of how and why mothers are using or not using ORT is an important management tool in assessing program deficiencies and alternative action strategies. A second difference from the WHO classification is the separation of ORT use (D) from ORT supply (E), on the basis of the use of different methods to collect these two types of information. However, since the supply of ORS should be based on figures for previous use as well as for expected growth, these two types of indicators may need to be reported together in matching demand of ORS with supply.

E. ORS Supply Management in Public and Private Sectors

If a program relies wholly or in part on ORS packets, the inventory levels, quantities shipped, and number of facilities experiencing stockouts are items of major importance in the ORT Information System. An inventory level can be intelligently interpreted only in light of past and anticipated shipping rates, and the adequacy of the past shipping rates must in turn be evaluated, at least in part, according to the number of stockouts occurring in given regions. For the private commercial sector, wholesale cash deliveries are generally adequate indicators of retail sales once the product has been launched, when anticipated or recent price changes do not confound current sales. However, in many countries redistribution practices may make it impossible, short of an area survey of retailers, to determine the number of retail outlets currently selling ORS. The precise number of retail outlets selling ORS should not concern the ORT program managers so long as wholesale figures, as well as measures of consumer access to ORS packets, are available.

F. Training (Including Supervision)

The number of persons trained, by type of training course, type of trainee, and/or institutional level, is a useful indicator for planning, monitoring, and evaluation. It is, however, equally important whether the training is adequate, this justifies adding a measure of the competency of those trained. This will often be a performance-based competency test regularly

administered by supervisors, enabling managers to evaluate the competency of both their training program and their work force in the field. A second component of training will be the production and distribution of training materials.

Since effective supervision is often the single most important element in an ORT program's success, it should be carefully planned and closely monitored. The manager can tell whether adequate supervision is possible and is carried out by regularly and carefully collecting data on the number of supervisory staff; the number of units to supervise; and the number of units actually visited. In addition, the number of units with ORT adequacy will give some objective measure of the adequacy of the supervisory system.

These indicators differ from several of those recommended by WHO, in that WHO indicators place more emphasis on the proportion of supervisory staff who have been trained rather than on the more operational measures above. The use of this operational approach reflects the belief that frequency of supervisory visits is a significant factor in motivating peripheral field staff and that careful monitoring of this variable will be an important management tool.

G. Knowledge, Attitudes, and Use of ORT by Health Providers

Participation in a training course is no guarantee that health providers have attained sufficient ORT knowledge. A written or oral test provides a useful measure of competency, both for public-sector and private health providers. The former can be tested in situ as part of supervisory visits, performance assessments, systems surveys, or any combination of these. The latter can be tested through sample surveys among different types of private-sector providers. But even adequate knowledge does not necessarily translate into favorable attitudes or actual use of ORT. When health providers are unconvinced, skeptical, or strongly negative about the value of ORT, some programs have found that they can be convinced by witnessing the effectiveness of oral rehydration for severely dehydrated children. Both attitudinal tests and indicators from service statistics (such as percent of children under five with diarrhea who were given ORT) can help identify health providers who would benefit from such additional training.

H. Public Communication and Education

As more and more ORT programs are including the use of mass media and public communication techniques for promoting ORT, the importance of monitoring this component of the programs has become increasingly evident. Even if the results of educational programs are difficult to measure, the efforts to educate the public about ORT are easily measured and should be reported by geographical area at least quarterly. Illustrative process indicators are: posters distributed, radio spots aired, and attendance at meetings. For a measure of the effectiveness of the communications program, indicators in section D - ORS Use Rates by Mothers - can be used to monitor public knowledge about the program.

I. Research

Status and progress reports of ongoing research projects, including expected completion dates, are minimal indicators that should derive from reports of the principal investigators. While qualitative rather than quantitative reports may be most helpful, a priority of research projects should be the documentation of methodology and results so that successful approaches to ORT developed in the laboratory or in operational research can be independently evaluated and reproduced.

J. Cost and Cost-Effectiveness

Although costs of ORT programs are generally easier to compute than measures of program effectiveness, there are some problems even in this computation. Special accounting efforts, particularly in integrated programs, may be necessary to apportion program costs to ORT. Programs may need to undertake such accounting in sentinel facilities or during short periods of time. Of course, care must be taken in extrapolating from a small number of facilities or short periods of time to the entire program. (See Chapter 6 for a full discussion of the financial implications and data needs for assessment of ORT programs.)

As an indicator of effectiveness, one can calculate the number of deaths averted, using WHO estimates of the case-fatality rate of untreated diarrhea (0.005) and the efficacy of ORT (0.67). Then, with survey estimates of the number of cases of diarrhea and ORT usage, one can estimate the number of children who would have died without ORT, i.e., the number of deaths averted through ORT usage.

13.2.3.2 Data Collection Methodology: Choosing How to Collect Data

There are a number of options for data collection which independently or, optimally, in some combination can comprise the ORT information system. Viewed as a system, they can also provide the skeleton or model for other primary health care interventions, e.g., those related to the Child Survival initiative.

A. Systems Survey

A survey at the different levels of the health delivery system, sampled so as to be institutionally, ethnically, geographically, and ecologically representative, can gather such data as "number of ORT packets distributed," "number of service units with ORT on hand," or "number of health workers trained in ORT" If a high level of confidence is deemed important, random selection of service units can be applied after the health regions or areas have been pre-selected according to empirical criteria of representativeness. The actual surveying can be done by mail where this is feasible, by project staff, or by individuals who are hired locally; none of these approaches need be costly. Such surveys can, when carried out by supervisory staff, constitute or encompass "performance assessments."

The WHO Manual for the Planning and Evaluation of National Diarrhoeal Diseases Control Programmes provides detailed descriptions of a sample

survey, a CDD program evaluation, and a comprehensive program review. Such major efforts should always be planned in collaboration with all major participants in the CDD program (UNICEF, USAID, etc.)

B. Censuses

The advantages of a general census are wide coverage and, where data exist, their availability at little or no cost to the health system. Health Ministries can sometimes "piggyback" special health modules onto forthcoming censuses or national household surveys. However, mortality data collected or estimated from general population censuses are generally not sufficiently specific to be useful as a single data set unless additional questions are added for a subsample. Moreover, the relative infrequency of general population censuses may render them unsuitable for measurement of program impact; they are certainly too infrequent for any monitoring utility.

C. Sentinel Systems

Sentinel posts, as defined here, are sample collection points selected to represent the entire project area. Ideally, they are staffed by specially trained personnel not encumbered with service delivery responsibilities. These personnel assist in the collection of complete, timely, and accurate service statistics, plus effectiveness data. Sentinel posts are basically of two types: passive and active. In the passive model, one person with basic statistical/clerical skills is added to a sample of service delivery units; that person is responsible for reporting service statistics information as well as effectiveness information gathered from routine home visiting and from community health workers.

An active sentinel system model involves a community surveillance system (see Surveillance Systems below) which uses active, systematic, prospective collection techniques, usually randomized, to gather data in some communities served by the service delivery unit. The advantages of a sentinel post system are that one can obtain high-quality, creditable data at relatively low cost without disrupting service activities. For some indicators derived from service statistics for which a total count is required, the sentinel post system is inadequate, but for other service delivery or output indicators, as well as for effectiveness indicators, the sentinel post system may be a good choice.

It is possible to choose one or both types of sentinel post system and to vary the number of sentinel sites depending on resource availability, program size, population density, and the program components involved. For example, high-density countries with high health-unit use may require minimal community-based data, while low-density and/or low-use countries may require a better-developed sentinel system. In any event, the same set of standard indicators should be collected in all sites. Training is usually required to set up this type of system, whether it is training of additional personnel or on-the-job training of existing staff. A sentinel system that collects information from a sample of geographical areas, health facilities, or selected personnel may permit better training and supervision of personnel, more concentrated expenditures of time and effort and, consequently, better-quality data than a general collection system.

D. Surveillance Systems

As indicated above, a surveillance system is a type of sentinel system which uses more active, systematic, and intensive data collection methods. As an example of a surveillance system, community workers may number all dwelling units in a circumscribed geographical area, identify all women of reproductive age, and systematically visit those women at prescribed intervals to ascertain whether or not they have had a death in the household. In Uganda, a surveillance system queried the 100 households closest to health centers. In Burma, although there is no sentinel system for morbidity as there is for mortality, a one-year longitudinal study 40 km. from Rangoon conducted daily surveillance of households, using trained midwives, and found an annual incidence of 103 diarrheal episodes per 100 children 0 to 5. The results are considered the most valid of the data sets on mortality available in Burma but, clearly, one must be cautious about generalizing from one area to the rest of the country. The difficulties of establishing surveillance systems and their limitations in providing data representative of the entire country are important constraints to reliance on surveillance systems for mortality data.

E. Surveys

The mainstays for collecting diarrhea-related mortality data have been household surveys based on large-scale probability samples, with short and simple questionnaires. WHO has assisted in fielding such surveys in more than 18 countries. Peru undertook such a nationwide survey of 18,000 households in late 1984. In Chad, UNICEF planned surveys in three areas of the country for 1985. A sample design to ensure equal probability of selection for individual respondents or households, as opposed to a quota or convenience sample, is essential for valid results. In order to find a sufficient number of cases, a sample of 5,000 or more households is generally required. A short and simple questionnaire facilitates interviewer training and reduces interviewing, coding, and tabulation costs.

Because of the time and expense involved in conducting surveys, managers will want to ensure that the data collected is reliable. Two factors will significantly increase the reliability of the data. The first is the provision of adequate training and supervision for all interviewers. As for other aspects of an ORT program, the level of supervision is critical to the performance of the staff in conducting reliable surveys. The second factor is what personnel will be used for conducting the survey. When surveys are done by field staff already involved in the program, significant bias may be introduced. Personnel naturally want the survey to show good results since this reflects on their work performance, and even the best intended workers may skew the data by inducing positive responses from those surveyed. Despite the cost involved, the use of outside, objective interviewers is needed for reliability of results.

Mortality surveys may be single or multi-round. A multi-round survey employs two or more comparable interviews over a specified time period for the same respondents (a panel study) or for samples defined within the same framework, e.g., respondents living within the same primary sample clusters. An advantage of a panel study over single-round surveys is that deaths of young children living at the time of the first interview are unlikely to be

missed. However, panel studies suffer from respondent dropout, the sensitization of respondents to the survey instrument, and a possible increase in refusals. A multi-round survey that uses the same questionnaire and sampling frame but different respondents is less expensive than a panel study. Egypt has undertaken multi-round surveys to measure diarrhea-related mortality with a sample of about 10,000 households in each round. The results are expected to be more accurate than could be obtained with a single-round survey.

Just as for mortality data, household sample surveys are a mainstay for obtaining morbidity data. However, because episodes of diarrhea are a more frequent occurrence than deaths, samples need not be so large. In most countries, surveys using a two-week recall period have been the principal means for collecting morbidity data.

Combinations of the above methods permit establishing correction factors for less expensive methods. For example, intensive surveillance for a small area or a multi-round survey for a subsample may permit validation or correction of a less intensive, nationwide, single-round survey.

F. Home Visits and Special Research Approaches

A methodology under consideration for use in the evaluation of Child Survival programs by AID would systematize the home visit as a data collection strategy, or part of one. It would rely on selected personnel already involved in a given project, who would be responsible for supervising the collection of data, analyzing the data, and transmitting the information to higher levels. In many projects, supervisors, field workers, community health workers, and others do make home visits as part of their normal activities. Although these visits may not be random or systematic, they can yield information on effectiveness that will be useful to the interviewers in their own work, as well as for project management. The information collected in this manner is limited for purposes of evaluation, but may have some value depending on the degree of rigor with which it is collected. One key to obtaining such information is to lighten the collection burden by keeping questions to a minimum; by asking the questions for only every nth home visit; by requesting such information on a revolving basis so that any given worker is responsible for reporting during only part of the year; or by obtaining information from only some of the service delivery personnel. This type of system usually requires that the selected personnel be relieved of some of their usual duties and be given some type of incentive.

13.3 PROBABLE PRINCIPAL ISSUES

13.3.1 Monitoring vs. Evaluation

An information system ideally allows for continuous correction of direction and policies, providing data about problems or failures to reach intermediate targets which can then be used to change or adapt activities. For example, data indicating a fall of sales of ORS packets could lead to a decision to add broadcast time or change advertisements in a mass media campaign. Low packet movement in one area might suggest the diagnosis that supervisory visits to field workers in that area were not being carried out. A high

percentage of patients with severe dehydration presenting to a hospital might point to a need to strengthen health eduation efforts regarding the early prevention of dehydration at home.

Such monitoring data, received, analyzed, and discussed at regular meetings, is the basis for managing programs effectively. This process makes it possible to achieve intermediate objectives and discover and solve problems.

13.3.2 Convincing Decision-Makers to Invest Time and Money in an Information System

Unlike investments in program components which have a clearly demonstrable impact on morbidity and mortality targets, it may be difficult for politicians and senior-level administrators to see the relationship between an information system and the population's health. Because the money and personnel needed for system design are in demand by other parts of this or other programs, decision-makers may feel that an information system is a luxury which they cannot afford, rather than an investment in the future success of the program. These decision-makers, however, must be made to see that investments in infrastructure such as an information system is a necessary requirement of a successful ORT program and one that will repay the initial investment many times over.

A second component of this problem is convincing decision-makers that an information system does not mean buying expensive computer hardware. While the investment in small microcomputers might be appropriate in certain circumstances, expenditures on large, centralized main frame computers eagerly promoted by both vendors and donors is usually a mistake. Politicians and high-level administrators may be enthusiastic about expensive computer hardware because of the "high-tech" luster and status that bestows but less enthusiastic about supporting the personnel and supplies necessary to maintain such a system. Large computers are seldom the answer to ORT information system problems.

13.3.3 Choice of Indicators

Each ORT program is unique. Countries will each have their own priorities and constraints and will tailor their programs to best meet the objectives which they have chosen. As a result, each program will also have a unique set of indicators which is appropriate for its particular targets and objectives. Choosing those indicators will often be a difficult and time-consuming task. While this may be simplified by adopting suggested indicators which have been thoroughly tested in diverse settings, each program can and should select indicators according to what will be useful to its own planners and managers rather than simply responding to the reporting requirements of external agencies. To do this, however, requires program managers to give considerable effort to the selection process.

13.3.4. Data Collection

A. Designing Data Collection System for Functionally Illiterate Field Staff

Information systems are reliant on the most peripheral health workers for the collection of data from the field. This poses a special problem for ORT

programs where many of the peripheral health workers (Village Health Workers or Traditional Birth Attendants) have minimal or no schooling and are functionally illiterate. Accordingly, the design of forms will need to take into account the minimal written language skills of these workers and rely instead on either pictorial representations or other non-language cues for data collection. Early work with this type of form has been very encouraging and has proven that such health workers can, indeed, record accurate data on most required indicators.

B. Determining Frequency of Collection and of Presentation

Since the collection, transmission, analysis, and presentation of data all bear costs, the information system must set frequencies in keeping with the need for the information on the one hand and the cost of obtaining the information on the other. For example, collecting mortality data through household surveys is an expensive endeavor, but one that need not be performed frequently. It is important to keep in mind that collection of information can be more frequent than analyis and publication. It may be necessary to collect information daily, weekly, or monthly, but the information may be useful for decision-making on a far less frequent basis. Longer intervals for publishing may be necessary either because in short intervals the data are too variable and not meaningful, or because those who receive and use the data do not need the information so frequently.

C. Vertical (Independent) vs. Horizontal (Integrated) Service Statistics Systems and Surveys

Integrating the ORT information system with other health information systems usually reduces costs, but it may also reduce the quality and amount of information. Designers of an ORT information system may have to decide how far to compromise before losing essential elements. It is wise, therefore, to list by priority the components of the ORT information system in order to cast off first those items deemed less important.

D. How To Obtain Private-Sector Data

There is no single, simple method to obtain private sector data. For commercial distribution of ORS packets, as mentioned above, one may be able to obtain the quantity of wholesale deliveries. If, for competitive reasons, such data are unavailable, one may be able to persuade competing commercial firms to follow a pattern used to estimate commercial contraceptive sales in Thailand. Companies provided their data in confidence to an auditing firm that totaled the sales and published the total sales figures without divulging the sales of individual companies. Thus, all companies could calculate their own market share on the basis of the total, and the Ministry of Health obtained the data it sought on total sales. Knowledge, attitudes, and use of ORT by private health practitioners and pharmacists, as with public health providers, are best studied through sample surveys.

E. How To Validate Collected Data

One can validate the recording of service statistics by examining records in health facilities, but such an examination is of minimal value if large

numbers of cases are erroneously diagnosed. However, such an examination can yield a percentage of all cases undiagnosed and thereby provide one indicator of undercounting.

For surveys, PRITECH recommends that supervisors re-interview a small percentage of respondents by asking a few key questions. Reinterviewing accomplishes two purposes : it ascertains that the interview was in fact carried out and it provides a measure of reliability for the re-interview items. For measures of morbidity in the recommended two-week recall period, the calculation of reliability is particularly valuable.

13.3.5 Determining Use of Information

A. Taking Action

The investment in the ORT information system will come to naught if the information generated is not used. However, managers are often reluctant to take decisive action in highly visible large-scale national programs unless they are certain of the success of their actions. While an information system can support such decisions, it cannot push managers to take the final step and commit themselves to a course of action. One method that may help in this effort is to have managers write scenarios for possible outcomes of difficult decisions to help them choose among alternatives. They must also understand that taking no action is, itself, a choice with resultant consequences and that it must be compared to other choices as to likely outcomes.

B. Providing Feedback

Although information for managers and managerial decision-making is an important reason for creating the ORT information system, feedback for rank-and-file health providers is also essential. Front-line health providers, often responsible for collecting service statistics, languish when not informed of program performance. The ORT information system should provide not only a vision of the overall program but also a view of performance in the health provider's own unit or area compared with performance in other areas.

ORT INFORMATION SYSTEMS

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 13.

I. Strategic Options

A. What information has the ORT program collected to date? Is a WHO CDD country assessment or mortality-morbidity survey available?

B. What information is currently being collected?

C. What information will be collected?

D. Is there an information-collection strategy? Are there special ORT program data-collection instruments? Have special categories been added to existing instruments and/or reporting forms?

E. What personnel and other resources has the program used to collect the data?

F. Are all the indicator areas discussed in this chapter encompassed by the existing country health and management information systems? Are the indicators used for those areas accurate?

II. Information Utilization

A. What reporting forms are used and how are they channeled?

B. For each indicator area, to whom are reports sent?

C. Are the reports read? Who reads them?

D. Who has acted on or used the reports as a basis for making policy, designing plans, monitoring and evaluating projects?

III. Frequency

A. When and how frequently are data for each indicator collected?

B. How frequently are data reported?

IV. Feedback

What mechanisms, if any, are used to feed the results of submitted and analyzed data to the individuals who generated them (i.e., the field staff)?

V. Presentation

How is information summarized and presented?

VI. Vertical (Independent) vs. Horizontal (Integrated) Service Statistics and Surveys

A. To what extent and how is the ORT information system integrated with other health information systems?

B. Are there data losses as a consequence?

VII. Obtaining Private-Sector Data

A. Are private-sector data compiled? How? From whom?

B. How are these data used? By whom?

VIII. Validation of Data Collected

A. What checks have been made for data validity (the degree to which data accurately measure what they purport to measure)?

B. What checks have been made for reliability (the degree of similarity between measures of the same item elicited from the same source at different times)?

CHAPTER 14: TRAINING OF PERSONNEL FOR ORT PROGRAMS

Joyce Lyons
Moses Thompson

14.1 INTRODUCTION

In planning and implementing ORT programs, the purpose of training must always be kept in mind: to produce health providers who can use their skills to help reduce morbidity and child mortality that result from diarrheal disease. ORT training programs should be assessed on the extent to which they fulfill this purpose and achieve the objectives that contribute to it, rather than simply on expanded inputs. This chapter is framed within this broader context, and considers the ability of training programs to help providers meet performance expectations and to help training institutions meet national coverage objectives. Assessment is considered at three levels: the health provider, the training program, and the training institution.

14.2 EXPERIENCE TO DATE/LESSONS LEARNED

14.2.1 Summary of Pritech and Other Relevant Findings

Review of the ORT Country Assessment Reports reveals several important findings which deserve consideration when planning the training system for ORT programs. Those included below are lessons learned from field experience with implementation; in many cases, they have already been factored into the re-planning process of those country projects.

A. Experiential, supervised training is the most effective ORT training technique.

Training that emphasizes direct, hands-on clinical application of newly-learned ORT techniques, under the supervision of experienced trainers, is more effective than training which relies on lectures or demonstrations by the trainer. The establishment of clinical training units in hospitals where there is a heavy caseload of diarrhea patients, for example, provides an excellent opportunity for physicians and nurses to gain first-hand practice in ORT case management. Staged experiences in clinics, experiential methods, and other active skill-based techniques achieve better and more sustained provider performance; ORT trainers are more likely to use ORT techniques correctly and consistently when confident of their ability to apply what they have learned, and when that confidence can mature through using new knowledge and skills under controlled supervised conditions.

B. Effective ORT training requires standardized curricula.

Training materials should be carefully designed so that they are consistent in terms of message content, and yet tailored to the particular role and tasks of the trainees, whether they be professional trainers, physicians, nurses, or traditional health attendants. WHO has developed a series of high-quality training modules for CDD program managers, supervisors, and peripheral health workers, to assist projects and agencies in using

training materials that are technically consistent. The need to adapt these or to develop new or different curricula and materials in certain country environments should also be recognized.

C. ORT training programs are more effective if they use ongoing workshops and followup, and if they are linked with supervisory systems.

Training programs that focus on short-term, intensive workshops and clinical experiences at regular intervals are more effective than those that use long-term academic course approaches. Likewise, effective ORT training programs link training with continuing education efforts and supervisory systems; both are effective means for either introducing ORT skills or reinforcing ORT training. Both dramatically accelerate the installation process.

Where budgets for ORT training programs are insufficient and increases in the government budget allocation unlikely, effective ORT training programs focus donor funding on activities that strengthen the system, such as support for systematic followup and supervision, as well as support for promotional meetings at all levels of the program.

D. Effective training programs are comprehensive in scope and depth.

The most effective programs strengthen the overall capacity of training institutions through the training of trainers and the development of well-designed curriculum materials; develop training programs to train enough providers and managers of providers to achieve national coverage; and provide support to both the trained worker and his/her supervisor to assure effective followup.

E. Training programs are more easily sustainable if they are institutionalized.

Training programs that are implemented through existing organizations and that are planned to be institutionalized from the outset are more easily sustainable when donor funding is reduced than are those relying on new project organizations and institutions.

F. Professional trainers require satisfactory job security and incentives.

To be implemented effectively, training programs require that full-time professional trainers work under conditions in which there is some minimum level of job security associated with their civil service position, salary, and career path.

14.2.2 Summary of Constraints

Past experience with ORT training program implementation has identified a number of common constraints, many of which appear to some extent in virtually every country that has been assessed. Several of these constraints lie outside the direct control and, often, even outside the indirect influence of the training program implementation team; nevertheless, they are likely to impose severe limitations on the effectiveness of training efforts

if they are not reduced or removed. The design of a maximally effective training system design will need to deal with each of these constraints wherever they are found:

- o Intractable and inadequate MOH budget for training;
- o Training program dependence on donor funding;
- o Lack of managerial expertise to run training centers;
- o Inadequate coordination among training programs;
- o Low morale among trainers;
- o Inconsistencies in curricula at all levels;
- o Lack of an overall ORT training policy;
- o Frequent organizational changes and rapid growth, resulting in weak supervisory, information, and evaluation systems;
- o Training funds favoring hospital services;
- o Central/regional tensions over decision-making and control related to training, producing duplication of effort and inefficient use of scarce resources;
- o Lack of a continuing education plan to correct for staff turnover and skill deterioration;
- o Training interventions too limited in scope to have national impact;
- o Lack of experience in developing quality ORT materials and designing formats;
- o A supply of packets that is uncertain and uncoordinated with the training program;
- o Lack of funds for training faculties to follow up on students, a necessary adjunct to improving both quality control and training program design;
- o Lack of sufficient training for village health workers and basic health workers in nutrition; lack of training skills among doctors working with small hospital staffs; and, for Health Assistants, lack of training in diarrheal disease management.

- o Problems in communication when materials or trainers use an unfamiliar language;

- o Lack of planning for followup of trainees by their supervisors to ensure implementation of the training at the homesite.

14.2.3 Summary of Options

The available options for the design of training programs are directly related to overall ORT program objectives, and training efforts should be explicitly designed to support these objectives. In summarizing the training options available, it is useful to first identify three basic program strategies and then review training approaches in relation to those strategies.

The three basic strategies within which an ORT program can be developed delineate the contexts in which to evaluate training programs. These strategies are discussed in Chapter 5, "The Planning of ORT Programs." Broadly defined, these are the traditionas public health strategy, the private/commercial strategy, and the intermediate/mixed strategy. The ensuing discussion elaborates on each, drawing on country assessments to show how each impacts on training options.

A. The Traditional Strategy

This strategy is essentially facility-based, public-sector-dominant, packet-oriented, provider-centered, demand-dependent, and generally inward-looking and reactive to outside pressures, rather than proactive. It is often limited by availability of supplies, management capability in the public sector, MOH budget, and donor policies.

Experience to date has shown that, in countries whose ORT programs are based on the traditional strategy, training should concentrate on upgrading health providers' skills and on improving the curricula of training institutions for physicians, nurses, community health workers, and paramedical personnel. WHO CDD training materials and support can be particularly helpful here. Equally important, quality ORT services must be maintained by providing continuing education courses and strengthening supervision systems.

B. The Private/Commercial Strategy

At the other extreme is the private/commercial strategy under which the government withdraws from any special efforts in ORT; the result is a program that is commercially-based, private-sector-dominant, packet-dependent, provider-centered, and demand-creating. This strategy lets the availability and distribution of supplies depend on consumer buying power and profit.

Where a private/commerical strategy is endorsed, assessment teams need to consider how to best encourage training of ORS distributors. The training options will depend on whether commercial distributors are pharmacists, village-based ORS holders, or strictly commercial sales lay persons. It will also need to take into account the ORS private distribution system. Where pharmacies are the primary source of rehydration salts, an emphasis should be placed on educating pharmacists and encouraging them to instruct mothers in

proper mixing. This subject is more fully addressed in Chapter 15, Part III; however, in brief, training of pharmacists can be approached through effecting changes in pharmacy school curriculum; developing an information network about diarrheal disease and ORT; or distribution of educational booklets by pharmaceutical company representatives or detail men. Where ORS is sold primarily in kiosks or small shops by a salesperson, the emphasis would be strongest on training health workers to instruct mothers in proper use of ORT.

C. The Intermediate/Mixed Strategy

This strategy builds on the strengths of both the traditional and private/commercial strategies. It maintains public-sector programs for service delivery, but also involves PVOs, cooperatives, and private-sector practitioners (including physicians and traditional practioners) in planning and management. It capitalizes on the ability of the private sector to distribute and market ORS and target sales towards income groups with adequate buying power, at the same time that public-sector programs provide service to the poor. It uses private-sector promotional skills to increase widescale demand for ORT and to build support among local decision-makers. It is client-centered and proactive and encourages self-reliance among the public.

The training challenge here is how to bridge the gap between the private and public sectors. Two options are: (a) to provide Ministry of Health training for health providers outside the government, and (b) to support private training institutions in establishing ORT training and continuing education programs in which public-sector health practitioners and workers can participate. For the first option, there are a number of examples in which initiatives have been taken to train and mobilize nongovernmental providers for ORT, immunization, nutrition, child spacing, and general primary health care services. Tratitional birth attendants, traditional healers, and community volunteers have all been successfully trained to provide services for their communities. For the second option, institutional development grants can be awarded to allow institutes to improve their facilities and capacity for providing clinical management courses for public-health physicians and nurses. Standardized training materials, such as those developed by WHO, can be promoted within private institutions in order to lower material development costs and to take advantage of the consistency of material.

A few examples of these strategies and their training implications follow:

Niger is an example of a strong traditional proagram. Clear government policy emphasizes the shift from curative to preventive health care, which is also reflected in budgetary allocations. There is an unusually well-developed network of supervised village health workers who educate families about ORT. About 40% of all families have access to this system. Direct contact with most of the population is a fact.

Although there is limited private-sector involvement in the ORT program, traditional birth attendants figure significantly in village health teams. In the attempts to decentralize ORT efforts to the local level and to develop

widescale coverage through village health teams, the program has encountered difficulties in staffing to capacity, maintaining training quality, and providing adequate supervision and management.

The assessment team recommended consolidating past successes under the traditional model and improving coordination of public-sector resources in order to achieve the coverage required, rather than involving private organizations and individuals.

The implications for training are:

1. Total coverage should be approached by training not only all health workers but also community development workers, literacy workers, and water agents, through county-level seminars.

2. Retraining should become a major feature of the system strategy.

3. A significant number of central- and county-level trainers should be developed to provide training and supervision.

4. Program administrators will benefit from attending management development workshops.

Chad exemplifies a situation in which the second strategy - private and commercial development of ORT programs - is the most desirable option. In the wake of civil strife, hospitals are deteriorating and government health services are barely functioning in rural areas. Given this unusually unstable political and economic environment, no national policy or program is possible.

In such a situation, only the private sector can currently provide the stability and resources necessary to initiate and sustain an ORT training program. Although the MOH should be the coordinating body, PVOs are best suited to conduct all health worker training, develop the ORT model, and extend it to rural areas.

Ecuador provides an example of the intermediate/mixed strategy. Public-sector programs have achieved multi-disciplinary, multi-level training of physicians, nurses, community leaders, paraprofessionals, and traditional healers on a national basis. There is a clear ORT policy and a fully-staffed organization responsible for ORT training at the provincial level. In addition, capacity exists to conduct yearly retraining.

However, the training programs involve not only the MOH, but private physicians and donors as well. The private sector has taken over responsibility for producing packets, conducting its own mass media campaign, and selling ORS at a reasonable cost to the public. Under these circumstances, the implications for training are:

1. It is important to emphasize retraining efforts and increased in-service training programs.

2. It is equally important to concentrate on supervision and training for supervision, producing manuals, guides, and checklists; obtaining funding for supervisory visits; and reviewing job descriptions and supervision patterns.

3. Health center directors will benefit from public health management training.

4. Training programs should be developed to help reduce residual resistance among rural medical practitioners and health care providers.

Where feasible, the intermediate/mixed program strategy is generally considered the most effective in increasing the use of ORT in most countries. By building on private-sector capacity to both create demand for ORS and supply ORS packets, the public sector is freed to focus its efforts on the poor and to coordinate training of public- and private-sector providers, helping to assure the service demanded by an aware public. This strategy increases access, promotes self reliance, decreases donor dependence, and augments the PHC approach.

14.2 PROBABLE PRINCIPAL ISSUES

The overall purpose of the training sub-system is to produce ORT providers who can use skills to reduce morbidity and infant mortality. Experience demonstrates that effective and comprehensive training programs include interventions at three different levels (see Figure 1):

1. the health provider;
2. the training program;
3. the training institution.

These three programmatic levels are closely linked. First, if ORT program objectives are to be achieved, health care providers must be able to use ORT techniques correctly. In order for appropriate techniques to be widely used, training programs must produce sufficient numbers of providers in specific standard ORT skills. Finally, to ensure that these training programs are of the quality and quantity desired, training institutions must be strengthened.

The discussion in this section will focus on key issues that should be considered in assessing training activities at each level, as a preliminary step to developing an effective training plan.

14.2.1 Level 1: The Health Provider

The importance of extending information on diarrheal disease to all levels of health care providers must not be underestimated. Morbidity and mortality rates will be reduced if, among other things, all health providers are reaching mothers with consistent ORT messages and technology. Moreover, it is not always sufficient to train health providers in the techniques only once: refresher training and supervision are often necessary to sustain their effectiveness. Because ORT is a relatively novel treatment in many areas, attention should also be given to possible resistance from practitioners who strongly believe in traditional methods, including intravenous rehydration and the ubiquitous anti-diarrheals, anti-spasmodics, and antibiotics.

FIGURE 1

BASIC ORT PROGRAM STRATEGY OPTIONS AND IMPLICATION FOR TRAINING STRATEGIES

STRATEGIC OPTION #1 Traditional Public Health Approach	STRATEGIC OPTION #2 Intermediate/Mixed Approach	STRATEGIC OPTION #3 Private/Commercialized Approach
Facility-based	Public service delivery plus PVO, coop. private sector practitioners involvement	Privatize the program
Public-sector-dominant	Commercial sales for targetted income groups, government focused on poor	Individual and commercially-based
Packet-oriented	Private sector promotion for awareness, support and demand	Private sector-dominant
Provider-centered	Demand-oriented, client-centered (client responsible), marketing-oriented, community-based, outward-looking, proactive	Packet sales-oriented
Demand-dependent		Provider-centered
Inward-looking		Demand creating
Reactive to outside pressures, limited by supplies, management budget and donor policies		Consumer buying power-oriented

IMPLICATIONS FOR THE TRAINING STRATEGY

Conduct widescale ORT training through MOH and other government agencies	Private sector conducts all training	MOH coordinates multi-agency, multi-sector ORT training efforts, physicians, PVOs, TBA, etc.
Train MOH-trainers	MOH coordinates policy and implementation	Involve private sector in curriculum development
Standardize ORT curriculum in all public institutions	Expand private training facilities, use of donor funds to develop private sector trainers/managers	Standardize curriculum for all agencies and providers
Discourage private sector involvement		Expand private training facilities
Get official approval for full-time trainer slots, salaries, career paths		Introduce hands-on training methods

Produce sufficient quality and quantity training materials

Strengthen public training facilities

Use hands-on methodology

Emphasize home preparation

Emphasize home preparation

A. Special Courses vs. In-Service Training

Special courses in ORT may be desirable if previous training of health workers has neglected key concepts and practices; however, special courses should not be considered a substitute for ongoing in-service training in ORT. In areas with high turnover of health workers, it will not be possible to continually administer special ORT courses to new workers; therefore, there is a risk of some providers administering ORT without the proper training. At the same time, health workers frequently need reinforcement of new concepts and techniques. Regular in-service training activities that incorporate ORT can address both these needs. Separate training courses may also have the disadvantage of being easy targets for budget cuts as the pressure on resources increases. Incorporating ORT content into in-service training programs ensures that it becomes part of the health provider's ongoing education and is integrated with his/her other job activities.

B. Mass Education and Community Support for ORT

Clearly, mass education and community support can greatly assist the health worker in promoting appropriate practices. However, these activities may not exist in many areas or even be planned before training of workers is scheduled to take place. While public education and community efforts are important support systems and should be encouraged as part of overall ORT program plans, it may not be realistic to expect that they should exist before health workers are trained and begin to provide ORT services to the community.

C.Training Before ORS Packets Are Available

If country policy is limited to the use of ORS packets and workers are to be trained only in packet-based therapy, it is important to ensure that adequate supplies will be available before training is completed. If distribution is far down the road and home preparation is considered a feasible alternative, training can proceed, as long as appropriate attention is given to preparation of homemade solutions; training should also teach providers how to instruct others in the preparation of these solutions. Training in new techniques will, nonetheless, be frustrating and easily forgotten if the minimal supplies required to put the training into practice are not available.

D. Supervision and Continuing Education To Support Training Efforts

It is highly desirable to have a strong supervision system in place prior to undertaking ORT field activities. An ideal system would include clear job descriptions for the provider, delineating ORT-specific tasks along with other responsibilities. It would also include a checklist of performance indicators for supervisors to use during followup visits to ascertain that techniques are being applied correctly. The focus of visits should be to help workers improve and develop new skills, rather than merely to identify deficiency in performance. Regularly-scheduled in-service training activities as part of the supervision system are also an excellent way to reinforce good practices and introduce new knowledge, attitudes, and skills.

Although few programs will initially include all of the above, there is some debate as to whether it is at all useful to begin training and undertake ORT activities without at least a structured supervisory system in place. The available evidence strongly suggests that the presence of lack of supervisory visits can have a significant effect on provider performance and motivation. It would therefore be advisable to dealy training until there exists, at a minimum, a system for regular followup visits by a trained supervisor.

14.2.2. Level 2: ORT Training Programs

Concerns at this level relate to how well training programs generate graduates equipped with the necessary skills to be effective in the field, and in enough quantity to achieve national coverage. In virtually all training programs, targets should be established for each type of health provider to be trained, and clear, objectively verifiable performance indicators should be selected which take into account the quality of training.

One must consider the following issues in determining the current and future capabilities of the program to produce targeted numbers of competent ORT deliverers: relationship of training content to expected performance; type and quality of training methodology; source of training materials; duration and location of courses; and coverage and effectiveness. Special training programs for supervisors may need to be included in the training plans, along with those for direct providers.

A. Relationship Between Training Content and Expected Performance

Effective training programs focus on the specific knowledge, attitudes, and skills that providers will need in order to perform their tasks; these tasks should be directly based on what is acceptable, feasible, and needed at the community level. Training program content should be derived from job descriptions; these should delineate all the critical tasks related to ORT that the provider is expected to perform, from administering salts to educating parents about diarrheal disease. Once this information has been collected, it will be necessary to reconfirm the desired performance in each area as a prerequisite for designing an appropriate training plan. Identifying the discrepancies between existing and desired performance will become the basis for developing solutions; these, in turn, will constitute the foundation of the training strategy.

A sound training plan should identify the specific performance improvements expected for each job, with performance indicators that can be measured or observed (Annex 1). Specific sessions can be designed to focus on each of these tasks; objectives for expected performance as well as criteria for evaluating trainee progress on each task will form the basis from which curriculum content and methodology are developed. While existing training programs may cover some of the critical areas of ORT, it is important that health workers receive comprehensive training to equip them to perform all of their major functions; otherwise there is risk of their using inappropriate practices or misinformation in their work. Reviewing and revising curriculum can take time; in making decisions about how much to change in existing curriculum, it is important to consider the trade-off of the benefits of a comprehensive standardized curriculum vis-a-vis the costs to program operation caused by delaying training until the new programs are ready.

B. Linking ORT with Other Health Concepts

The same issues that arise in deciding whether to undertake special courses for ORT, as opposed to integrating them with existing training, apply here. Again, training content emphasizing ORT-specific tasks and knowledge may be appropriate at the initiation of an ORT program in a country; however, to ensure that providers understand and are able to communicate to others the importance of nutrition, breastfeeding, and growth monitoring in the prevention and treatment of diarrheal disease, it is important to consider integrating training in ORT and these related areas into standard continuing education curricula.

Special courses can be designed to incorporate ORT into other intervention strategies. WHO, for example, is currently in the process of revising its CDD program managers' courses to include measles immunization, promotion of breastfeeding, water supply and sanitation, and personal and domestic hygiene, for probable use at the regional level.

C. Competency-Based Materials and Active Learning Methodologies

The issue here is how much to change in existing materials and educational approaches, balanced against the resultant delays in training programs. There is considerable evidence that passive learning methods (e.g., lectures, reading, demonstrations by trainers) are much less effective in teaching skills than more participatory methods: direct application of new skills in training sessions, discussion of patient cases, role-playing, or any approach through which trainees can receive immediate feedback from colleagues and trainers on their understanding and performance. Taking the time to integrate some competency-based materials and active learning techniques into existing training programs is likely to make training programs more efficient and effective in the long run; trainers can identify and correct misconceptions during training, and less re-training should be necessary in the future.

If existing materials and educational methods are to change, it is necessary to weigh the relative advantages of developing new materials within the project, subcontracting the work to private organizations or other institutions, or using standardized training packages such as those developed by WHO.

WHO has developed three courses for improving national CCD programs: a national program managers' training course, a supervisory skills training course, and a training course for peripheral health workers. In addition, a clinical management course is under development as of this writing. These differ from traditional training courses in that the materials are designed to assist each participant to develop specific skills at his or her own pace, within the time limits of the course. The modules combine the advantages of individual work with those of small group discussions.

The national program managers' training course, for example, consists of a set of seven modules: Introduction; National Priorities; Objectives and Targets; Delivery Systems; Sub-targets; Logistics; Evaluation; and Problem-Solving. Each module is designed to provide the information and skills needed to perform particular tasks necessary to establish and manage a national program for the control of diarrheal disease. Since 1980, this course has been held 28 times, and has been attended by almost 1,000 participants from at least 128 (primarily developing) countries.

The supervisory skills training course, initiated in 1983, is directed at first-line supervisors of staff working in health facilities and community health workers and, like the program managers' training course, is built of modules that require participants to practice the skills they are learning. The course is designed primarily for use at the subnational level; its content deals not only with diarrheal disease control but also with other elements of primary health care, such as immunization and malaria control. At least 35 courses have been held in 26 countries, attended by approximately 1,500 participants from 37 countries. Results from these sessions have been multiplied by repetition within the countries of the trainees.

There is also a CDD Program training course for peripheral health workers but, considering the wide variations in recommended procedures for preparing household ORT solutions, which depend in turn upon country strategy, cultural practices, service outreach, etc., WHO considers that most peripheral workers can be better prepared at the country level. Thus, these materials serve best as a basic model, to be modified to meet specific needs of ethnically and culturally-diverse populations.

The CDD course material developed by WHO is presently available in Arabic, Burmese, English, French, Indonesian, Nepali, Russian, Spanish, and Thai. Recognizing that the quality of clinical management training courses can be improved, the CDD Program has also decided to develop a training package which will contain guidelines to assist directors of training units in organizing such courses, as well as written technical materials for use in training. Much of this package should be available in 1986.

D. Length and Timing of Training Courses

Another argument for including ORT training as part of regular continuing education activities is that trainees tend to retain knowledge and skills which are taught in short, highly-focused workshops better than those taught in longer academic courses where many new ideas and techniques are introduced at once. Followup supervisory visits should be coordinated with each workshop so that new concepts are immediately reinforced and discussed after the trainees have had the opportunity to test them out in their work environment.

It is critical in planning, monitoring, and evaluating CDD programs to know the coverage and effectiveness of training activities. In the vast majority of developing countries, coverage is intensified in some areas and weak or nonexistent in others. It is important to know the size of the population covered by each health worker and the distribution of health workers, in order to most effectively determine a training strategy, to determine manpower training needs, and to assess impact. Impact assessment also relies

on information about the effectiveness of training. Systematic observations and interviews regarding correct use of ORT should be held with mothers who have been trained by health workers, as well as with the trainees themselves. An evaluation of mothers' ORT practices is in many respects an effectiveness measure for the training process.

4.2.3 Level 3: The Training Institution

The concern at this level is whether there is sufficient institutional capacity to plan, run, and evaluate appropriate ORT training courses and workshops. It is important to know if the institutions are able to recruit sufficient and qualified staff, train trainers, and design and develop curricula, and whether they have a clear idea of their overall objectives. Some of the key factors to be considered are:

A. Degree of Institutional Commitment to ORT

Prior to investing funds and energy in any one institution to strengthen its ORT training capacity, it is important to determine how ORT is seen within that organization. If there is a choice of training institutions with which to work, clearly the assesssment should focus on determining which ones are more committed to and capable of running ORT training programs. If there is only one institution with which to work, and if there is any question about whether ORT training is an institutional priority, the assessment should explore ways of strengthening the organization's interest in and commitment to ORT. Among the indicators that can help determine the degree of institutional commitment to ORT are: institutional objectives that include ORT-related programs; the existence of current ORT training curriculum and courses; budget allocations commensurate with ORT training objectives; expressed interest by institutional leaders; staff perceptions of the overall importance of ORT in primary health care and of its relation to other institutional training activities.

B. Institutional Capacity To Conduct ORT Training

A key issue is whether the institutions that are or will be conducting training have the capability to sustain effective ORT training efforts. Often institutions agree to add new programs or increase the number of existing courses without actually having the internal ability to carry them out effectively; the organization may make this agreement out of genuine commitment, because of external pressure, or for financial reasons. In any case, the assessment should attempt to determine the extent to which the organization already has the capacity to provide effective training and in what areas that capacity may need to be improved. Some of the areas that should be investigated are: the level of staffing, including ratio of trainers to trainees; the clarity and security of staff positions, including clear job descriptions and delineation of responsibilities, appropriateness of salary levels, and existence of career paths; the stability of the staff as evidenced by the degree of turnover; the strength, ability, and continuity of leadership; and the extent to which there are appropriate management systems in place, such as accurate accounting and financial control systems, program planning and budgeting procedures, and consistent personnel performance standards and assessment practices.

C. Continuing Education for Training Staff

Another measure of institutional capacity is the degree to which it offers trainers the opportunity to upgrade their curriculum development skills and learn new teaching approaches. Continuing education is especially important for training staff, since their capabilities have a direct impact on the results of the training; trainers keep abreast of improved teaching approaches as well as of current information on ORT practices. Unless regular refresher activities are included as part of professional staff development, the quality of training activities is likely to suffer. At the same time, the organization should attempt to ensure that trainers maintain an appreciation for the field-level environment in which their health providers work; contact with the field can be accomplished through direct followup visits to training courses or as part of regular continuing education efforts. The institutional assessment should attempt to identify areas where continuing education of trainers may need to be strengthened, as one means of improving the quality of training results.

D. Inter-Institutional Collaboration and Coordination

In most countries, it is possible that more than one institution will be involved in the training of health providers in ORT concepts and methods; it may also be true that ORT service activities by the MOH will be supplemented by other private and voluntary organizations. Efforts should be made to ensuer that appropriate standards of quality are maintained in all training and all service delivery activities; close coordination among the groups will be an important determinant of the overall success of ORT programs at the national level.

One way to improve the curricula of training institutions for physicians, nurses, community workers, and paramedical personnel is to convene national workshops designed to achieve this purpose. CDD projects should include in their activities national and regional conferences, as well as professional meetings to involve professional associations in CDD program activities.

In determining how to strengthen collaborative efforts, some important considerations are: the effectiveness of existing procedures for inter-institutional cooperation and coordination; the kinds of incentives for cooperation that exist among groups; the extent to which all institutions are using a standardized training curriculum; the joint ability of the training institutions to achieve national coverage; and the degree to which PVOs and other non-governmental groups are being encouraged to complement Ministry of Health training efforts where feasible.

The interdependence of the three levels of training is a critical element in the assessment of training plans and programs. Without clear performance expectations of the providers and a strategy for achieving national coverage, it is difficult to design cost-effective training programs. And, if specific training programs cannot be defined with targeted indicators, it will be unrealistic to believe that efficient institution-strengthening efforts are possible.

In summary, effective assessment of ORT training program requirements begins with a clear identification of the final results to be achieved, not with the inputs to be expanded. In addition, a useful training plan must not only indicate the factors and conditions necessary for achieving training objectives; it must also identify those factors beyond the direct control of those responsible for the training program. Dealing with some of these factors may be pre-conditions for implementing training efforts; the plan should indicate the steps that must be taken to ensure that all essential conditions are in place before training programs begin.

The plan should identify methods for verifying improvement in training performance, including documents, types of interviews, or observations which will attest to achievements. It should consider national coverage needs for all positions and include estimates of required financial and institutional resources, along with a determination of their availability.

TRAINING

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 14. A more detailed guide for assessment of ORT training programs is attached as Annex 1.

A. Training Approach

What is the training strategy?
Is it appropriate?
How should it be modified?
How is training organized?
Who is being trained?
How frequently?
Are followup courses planned?
Are health workers training mothers?
Can non-governmental organizations be involved to supplement weaknesses in the public health system?
Are NGO activities sustainable?

B. Standards of Performance

Are there job descriptions for workers that describe their expected performance in clear, objectively verifiable terms?
How can one assure that training programs are based on actual job requirements and agreed-upon standards of performance?
How can one keep trainers commditted to the performance objectives of the trainees?
Can the training staff be involved in training needs assessment, evaluation, followup, and supervisory visits?
How will institutions build performance standards into the curriculum?

C. Supervision

Is there a structured supervision system?
How is supervision linked with training?
Have supervisors received ORT training?
Is there provision for supervisory followup of trainee performance?
Does supervision include evaluation of provider performance in diarrhea-related activities?
If so, how is this information fed into the management information system?

D. Training Courses

How many WHO courses have been conducted?
- For Program Managers
- Supervisory Skills
- Clinical Management
- Peripheral Health Workers

What proportion of workers have been trained? How were they selected?
How should WHO materials be integrated into training programs?
How are peripheral health workers trained? With what materials?
Is community-level training done as part of in-service or through a special course?

E. Training Content

Are ORT messages consistent between courses and materials and across target training groups?
Is information presented appropriately in terms of educational level?
Is there a clear protocol for when to instruct in the use of ORS packets versus home-prepared solutions?
Does ORT training include proper education regarding feeding habits during diarrhea, misuse of antibiotics, anti-diarrheals, referrals for severe cases?

F. Training Techniques

Are the training programs making effective use of accelerated learning methods that emphasize direct application of new knowledge and skills under supervision?
Have clinical training units been established in hospitals or clinics for use as training centers?

G. Training Materials

Are health workers provided with educational materials?
Should materials be improved or supplemented?
- How?
- Given budget constraints, what is the most reasonable, cost-effective alternative?

Do training plans include sufficient schedules for designing, producing, and distributing materials?
- Clinical training films
- Booklets
- Training manuals
- Medical newsletters

How can one assure that training materials are integrated with breastfeeding guidelines, and with nutritional and growth monitoring educational materials?
Are audio-visuals being distributed?

H. Followup Training and Continuing Education

How should followup be designed: directly to workers or in coordination with workers and their supervisors?
Is there sufficient frequency of in-service training to assure quality of service?
Is funding for followup visits or continuing education realistic, or should followup be conceived in some other way (field placements in clinics, greater use of live application during training courses, etc.)?
Do trainers receive continuing education courses; do they have opportunities to improve skills in both content and training methodologies?

I. Coverage and Effectiveness

Are the training programs sufficient?
What can be done to expand coverage of the target training group?
What percentage of the population is not covered by field workers?
Is there a mechanism to test the effectiveness of health workers' training?
How is information regarding coverage and effectiveness fed into a management information system?

J. Institutional Committment and Capabilities

Is ORT training perceived as important by the training institution? as an essential requirement for reducing infant mortality?
How does the budget allocation for ORT reflect a committment to the training objectives?
How stable is the training institution? Is there sufficient continuity in the leadership? What kind of staff turnover is there?
Is the institution sufficiently staffed? How secure are its staff positions: are they officially-approved civil service slots, at acceptable salary levels, and with some kind of career path? Are there jobs descriptions for trainers and institution staff?
How will curriculum development skills be strengthened among the staff?
How will the institution assure that trainers have a close field-level appreciation for the context in which their trainees function?

K. Institutional Collaboration

How will the training institutions (public and non-governmental) collaborate and coordinate their activities?
Where is the authority and control for training providers?
What professional health associations exist?
What role can they play in training health providers?
Have national or regional conferences/workshops been planned or held? for whom?

ANNEX 1

DETAILED ASSESSMENT GUIDE FOR PLANNING ORT TRAINING

LEVEL OF ANALYSIS AND ASSESSMENT TARGETS	CHECKLIST FOR _____ (TYPE OF WORKER)
Level 1: Worker Performance	
A. Existing Personnel	1) Identify number and type of all health personnel from management to extension in MOH, NGOs, or private sector, as appropriate. 2) What opportunities or previous experience are there in the traditional sector (i.e., TBAs, TMPs etc.) for promotion or lateral mobility?
B. Community Resources	1) 2) 3)
C. In-Service Training	1) What is the frequency of in-service training?
D. Supervision	1) Is there a structured supervisory system? 2) What is the approach to supervision? (punitive? supportive?)
E. Reference Materials	1) Conduct an inventory of reference materials in use at training institutions in the field. 2) Identify need for additional materials.

LEVEL OF ANALYSIS AND ASSESSMENT TARGETS	CHECKLIST FOR _____ (TYPE OF WORKER)
F. Performance Guidelines	1) What are the observable, measurable skills required of the workers? 2) Are these skills clearly specified? 3) For implementation of ORT programs what are the actual knowledge and skills required? 4) How are performance guidelines compared with training curricula?
G. Job Descriptions	Collect and analyze job descriptions for workers. 1) Are they sufficiently clear and relevant to program objectives? 2) What discrepancies exist between pre- (and in-) service training programs and job descriptions?
<u>LEVEL 2: Training Programs</u>	
A. Learning Process/Objectives	1) Does the course have learning objectives? 2) Do the objectives cover knowledge, skills and attitudes? 3) Do the students have an opportunity for appropriate skill practice? 4) Are appropriate media used during training?
B. Materials	1) Do the training materials include established technical standards for ORT? 2) Do the trainers have guidelines for conducting lessons in ORT?
C. Activities	1) Do the activities include active interaction/learning opportunities? 2) Is sufficient time allocated to learning activities?

LEVEL OF ANALYSIS AND ASSESSMENT TARGETS	CHECKLIST FOR _____ (TYPE OF WORKER)
Level 2 (cont.)	
D. Evaluation	1) Does the course evaluation include knowledge and skills assessment?
	2) Is the evaluation procedure based upon criterion measures?
	3) Are there established criteria for minimally acceptable performance?
	4) Are students informed of the standards for successful performance?
	5) Are the students given remedial opportunities to meet the minimal standards?
E. Trainers	1) Do the trainers have basic knowledge and skills needed for teaching ORT?
	2) Do the trainers allocate sufficient time for ORT learning activities (i.e., knowledge transfer and skills development)?
	3) Do the trainers provide the students with written and/or visual information concerning ORT?
	4) Do the trainers have an established plan for transferring knowledge and skills in ORT?
	5) Is the training staff permanently assigned to the teaching insitution?
	6) Does the training staff have qualifications/experience that are appropriate for teaching ORT?

LEVEL OF ANALYSIS AND ASSESSMENT TARGETS	CHECKLIST FOR _____ (TYPE OF WORKER)
Level 3: Institutional Training Capacity	
A. Institutional Structure	1) In what institution is the worker trained?
	2) Under what administrative umbrella (ministry, private, quasi-private) is this institution?
	3) Is there ministerial/institutional overlap in the training?
	4) What percentage of this type of worker is trained outside the country?
	5) What percentage of this type of worker is trained "formally" vs. on the job?
	6) In what sub-unit(s) of the institution is the training based?
	7) Is primary care training of high priority in the institution?
	8) Does the institution also train the supervisors of the workers under study?
B. Goal Definition	1) Are there clearly elucidated, written, applied training program goals?
	2) Is there a job description with specific tasks for this worker?
	3) Is the job description based on a task analysis/job analysis?
C. Training Staff	1) Is the training director motivated?
	2) Does the training director believe in the value of this type of worker?
	3) Does the training director have some "clout" in the institution?

LEVEL OF ANALYSIS AND ASSESSMENT TARGETS	CHECKLIST FOR _____ (TYPE OF WORKER)
Level 3 (cont.)	4) Are the director and staff trained in the methodology of competency-based education?
	5) Does the training staff have knowledge and expertise in primary health care and field experience with it? Is the staff familiar with local culture?
	6) Are there specific criteria for staff selection (job description, prerequisites, primary care expertise, experience)?
	7) Is there sufficient staff to perform competent teaching?
	8) Is the quality of teaching evaluated by the program director? peers? Students?
	9) Is there a training staff development program? Does this include continuing education in ORT?
	10) Are there incentives for the staff to continue in their work (recognition, salary increase, trips, per diem, etc.)?
	11) Are there possibilities for vertical or horizontal mobility? Has this really happened? Give instances.
D. Training Facilities	1) Does the training institution have policies to assure adequate training facilities?
	2) Is this evident as one observes facilities?
E. Trainer Training	1) Is there a program to train trainers for new programs?
	2) If so, does it include skills and knowledge in: primary care? educational techniques? local culture?

LEVEL OF ANALYSIS AND ASSESSMENT TARGETS	CHECKLIST FOR _____ (TYPE OF WORKER)
Level 3 (cont.)	
F. Curriculum Development	1) What is the curriculum development process of this training institution? 2) Does the curriculum development process proceed in the following manner: job analysis of existing workers; task analysis setting of teaching priorities, including tasks; development of learning objectives from these tasks; other (specify). 3) Do learning objectives and content encompass: cognitive knowledge? attitudes? psychomotor skills? communication skills? 4) Does student evaluation emanate from the learning objectives, and is it performance/competency based?
G. Evaluation	1) Does the institution have at least a minimum training program evaluation design? 2) Does it evaluate the following? Inputs: budget recruitment & selection number of trainers Process: training methods appropriate technology performance evaluation. Outputs: number of skilled graduates annually money spent/cost per graduate

CHAPTER 15: EDUCATION OF THE HEALTH PROFESSIONS FOR ORT PROGRAMS

15.1 INTRODUCTION

Reluctance of health professionals to fully accept ORT has been widely cited as a major stumbling block to national programs. As in any profession, there is a broad range of skills, motivation, and personalities among doctors, nurses, and pharmacists. Efforts to reach them during their education, as well as during their careers, must be varied and must start from an appreciation of the various attributes and factors affecting their attitudes and practices.

Oral rehydration can be the leading edge of proper case management and the demystification of health technologies. Its introduction into the curricula of the major health professions, as outlined in this chapter, can be a first step in modernizing the approach to training health professionals, making their entire education more problem-oriented, more culturally and socially sensitive, more scientifically valid, more dynamic, and more relevant to their own people.

PART I: EDUCATION FOR PHYSICIANS

Jon Rohde
Robert Northrup

15.2 EXPERIENCE TO DATE/LESSONS LEARNED

15.2.1 Summary of PRITECH and Other Relevant Findings

Assessment teams have not as yet focused on the relationship between medical education and ORT programs. But, even without the benefit of direct findings from these assessments, some general observations can be made on the basis of years of technical assistance in primary health care in general and ORT in particular.

It is interesting to note that oral rehydration therapy was researched, developed, and implemented first in the developing world and achieved a far greater acceptance at the highest-level medical centers of the Third World before it was reluctantly recognized by practitioners in more developed countries as appropriate and desirable for their patients. It is also noteworthy that, when properly trained and motivated, physicians have had major responsibility for the introduction and promotion of this life-saving technology. The key question is, of course, how to achieve the necessary training and motivation of physicians in the context of current educational practices.

Undoubtedly, medical education in many developing countries - as in the West - adheres too often to outmoded pedagogic approaches and fosters an over-sophisticated and "medicalized" approach to health problems. There is a strong orientation towards Western allopathic technology, often poorly adapted or patently inappropriate to developing countries.

Because medical education is a university activity, it is customarily conducted under the direction of the Ministry of Education. There may be little direct communication with the Ministry of Health, which is to be the "consumer" of the product of the educational process. Examples of this situation may be found in Indonesia and Haiti. In both countries there is minimal direct involvement of the MOH in planning educational activities and, at the regional and local levels, very little involvement of the health care system - particularly the rural system - in the teaching program.

The usual exception is the tertiary care hospital which often falls within the aegis of the Ministry of Health, but which just as often is out of step with the philosophy of the MOH in regard to ORT. This disparity between educational philosophy and actual practice can be clearly seen in Haiti, where the University teaching hospital boasts a widely-acclaimed oral rehydration unit, where mothers are taught to effectively rehydrate their own children. Within the same hospital, intravenous therapy is used routinely on the wards. Mothers who bring babies with diarrhea to the out-patient clinic or emergency room are given prescriptions for bags of intravenous solution plus anti-diarrheal medications, with no instruction for the use of ORT. These practices hardly convey a clear ORT message to the medical students and physicians in training who look to the University Hospital as a source of enlightenment.

While introduction of changes in medical school curriculum and teaching methods is a slow and often difficult task, it is clearly a prerequisite to the long-range solution of the diarrhea problem. Under the influence of WHO, many countries have begun to approach a rational process of curriculum design. Epidemiologically-determined health care needs are being transformed - at least nominally - into teaching objectives, and curricula examined for their relevance to these needs. Some medical schools have made immense strides in defining curricular goals and objectives, and in reconsidering the balance of lectures, field activities, and laboratory work in the educational process. But these promising beginnings are still rare, and most developing countries labor under enormous constraints in the effort to create a more relevant educational program for physicians.

At an informal meeting at WHO in September 1985, a small group of experts reviewed the current situation on the teaching of scientific and public health aspects of diarrheal disease in medical schools. While they recognized that there are many areas for improvement, they singled out two - active experience rehydrating patients and direct interaction with mothers - as the critical factors in improving skills, competence, and attitudes among physicians-in-training.

15.2.2 Summary of Constraints

A. Lack of Clinical and Community Experience

The single most important constraint to effective training of doctors is lack of adequate direct experience: in the use of ORT, in clinical case management, and in opportunities to edeal directly with mothers and other child care providers. Doctors, like others, learn by doing, and all too often they are given little or no responsibility for patient management until they leave their formal training. Anecdotal experience, rather than a

carefully-gathered collection of cases and scientifically valid observations, tends to guide their clinical judgment. While they recognize that patients come from a community often substantially different from their own, they are frequently quite out of touch with the realities that make up their patients' lives or of the community forces which so greatly influence them.

B. Lack of Importance Attached to Pediatrics and Community Medicine

While almost half the population of developing countries is under the age of 15, there is a remarkable lack of emphasis on clinical pediatrics in most medical schools. In some schools, it is considered a minor division of medicine, receives little curriculum time, and is not an examination subject. Even where pediatricians recognize the importance of diarrhea and use ORT properly, the student cannot help seeing the low prestige and general neglect of the subject in the academic setting and treating it accordingly.

Community/social medicine is similarly eclipsed by the more glamorous clinical disciplines, the dynamics of population-based medicine receiving little time in the lecture hall and even less in practice. Medical professionals in developing countries are generally trained following a classical model derived from Western institutions. Starting with a grounding in basic sciences, the student is provided with didactic clinical guidelines, followed by an apprenticeship with varying degrees of responsibility prior to being graduated. The graduate most often has had, at best, minimal exposure to the community and social environment of the population he/she will serve.

C. Departmentalization and Isolation

Medical schools are generally separated rigidly into academic departments, with little cross-communication between the disciplines, making integrated teaching difficult. Even within the departments, each lecturer or teacher essentially defines his/her own activities. There is little supervision by department chairmen, and it is unusual to find an effective coordinating body with responsibility for either the teaching process or the content of the lectures. The title of the course is frequently all that is known about it by fellow faculty members and academic administrators.

D. Reliance on Textbooks and Lectures

Lack of materials in local languages and a dearth of visual support materials or money for laboratories makes adoption of Western textbooks often the sole pedagogic approach. Although slides on diarrheal diseases are now widely available from WHO, the facilities in many medical schools do not facilitate students' direct use of these slides or of other teaching aids. Lectures, often little more than reading of the textbook in front of a large classroom, are the preferred teaching method, with little experiential verification and virtually no opportunity for learning through experiment and observation.

The textbooks that form the core of most courses are often inappropriate for the local situation. The prevailing Western texts naturally give little emphasis to the importance of diarrhea as a major epidemiologic problem. And even when they do deal with the issue of diarrheal diseases, they frequently reflect the long-term bias of the medical establishment against ORT as the

treatment of choice in diarrhea. The texts are often in a foreign language, creating a major barrier to many students' full grasp of the material. Social sciences receive little time in the curriculum and, where present, are almost always divorced from the more "important" clinical studies.

E. Low Faculty Salaries

In most developing countries, faculty salaries are very low, encouraging faculty members to devote most of their energy to their private practices. In Haiti, for example, most medical faculty are engaged in their private practices throughout the morning and afternoon, taking small segments of time out for their teaching responsibilities. It is unusual for a faculty physician to spend adequate time on teaching rounds or to devote more than the minimum required lecture time with students.

This situation is particularly detrimental in the areas of field education and community activities. These are, of course, the components of the curriculum that are crucial in conveying the importance of ORT and developing technical skills in its use. They are, however, also the components of the curriculum that require the teacher to spend time away from the city and his medical practice.

Under this barrage of constraints, it is no surprise that medical professionals tend to accept long-established ways of dealing with clinical conditions, are reluctant or unwilling to consider new scientific advances, and appear largely insensitive to the sociological and economic factors in the lives and health of their patients.

It should be noted that some of these constraints have been effectively overcome in a number of countries. Where this has occurred, major changes in professional education have often had a great impact on the very character of the medical profession, bringing to it a new level of dynamic leadership, sensitive to the needs of patients and uniquely adapted to the culture and resources of the populations whom the profession serves.

Thus the inclusion of ORT can be both a precursor and a result of changes in medical education. A solid program introducing ORT and proper diarrheal disease management into the training of health professionals has often been an important first step in the transition to more effective education; it is also an important beneficiary of the process.

15.2.2 Summary of Options

The overriding strategic option is, of course, to introduce through ORT programs appropriate revisions in professional education, embracing basic sciences, clinical teaching, case management, and community and social sciences. These changes in curriculum are likely to produce graduates who are effective practioners and public health leaders. The following section states the basic issues in improving the medical curriculum and suggests steps to take in dealing with them.

15.3 PROBABLE PRINCIPAL ISSUES

Medical education relevant to the control of diarrheal diseases, and particularly to the management of the patients with diarrhea, can be divided into four components: basic sciences, clinical teaching, experiential training, and community outreach. Although these components are almost universally introduced into the medical curriculum in the above sequence, their relative influence on the medical graduate's ability and motivation to manage diarrhea in individual cases and the community is almost the inverse. Experiential training in an ORT unit is the critical step in assuring competence and confidence in clinical case management. The most effective model for such training is a community experience wherein the student learns to evaluate the environment in which his or her patients live and to mobilize community resources to deal more effectively with the diarrhea problem. Through such an experience, the student develops critical management and communication skills, essential to effective leadership of a health team.

Clinical teaching in diarrheal disease and integration of relevant scientific principles into the teaching of the basic sciences can also make useful contributions to the effectiveness of the graduate physician. These modifications are in some ways even more difficult to institute and have less overall impact than experience in the ORT unit and the community. However, because of the usual sequence of medical school curriculum, the four components will be discussed in the order given above. The Annex at the end of this chapter lists the classically-taught subjects in medical and nursing schools, identifying the subject matter most appropriate to the understanding of proper management of diarrheal cases.

15.3.1 Basic Sciences

This area encompasses the scientific principles which underlie proper understanding and management of all illnesses, including diarrhea. A full scientific understanding and appreciation of the technical soundness of oral rehydration is necessary if health professionals are to appreciate the scientific rigor of this disarmingly simple technology. Unfortunately, in most medical schools these basic sciences are considered separate and apart from clinical practice. They are often viewed by teachers and students alike as a necessary prerequisite to reaching the clinical years, but in no way necessary to patient management or to the subsequent career of the health professional. It is therefore important to verify and illustrate that these basic scientific principles are essential to a firm understanding of the transmission of diarrhea; the process of dehydration and its effects on organ systems and the overall body physiology; the intestinal mechanisms underlying the development of oral rehydration therapy; and the physiological principles underlying the finding that oral rehydration is safer and more appropriate in the vast majority of cases than are present treatment regimes.

Pedagogic methods should attempt to stress the clinical relevance of basic science facts and should be adequately illustrated with audio-visual aids, written material, and, where possible, laboratory or clinical demonstrations to further demonstrate and underscore the relevance of this knowledge.

Introduction of interesting and effective teaching material in the anatomy, physiology, and immunology of diarrheal diseases can be a first step in improving the entire pedagogic approach to medical education. Where basic sciences related to diarrheal disease are well taught, students have been shown to accept and use more effectively oral rehydration and related skills in the management of diarrheal disease in individual patients, as well as in the community at large.

Experience with curriculum revision has generally shown that, although interdepartmental efforts and integrated teaching approaches are desirable, departmental prerogatives are difficult to assault. One promising way of insinuating new information on the scientific basis of diarrheal disease management is to introduce improved learning materials to students during their clinical expeience on an ORT clinical unit (see 15.3.3). There, appropriate publications, slide-sound sets, self-testing materials, case studies, and other up-to-date materials are likely to be welcomed by students seeking guidance and clarification on the scientific issues that invariably arise in patient care. Once such materials and approaches have been accepted and used by clinicians, teachers in basic science departments will often show an interest in obtaining and using them in the earlier years of medical school.

15.3.2 Clinical Teaching

This area involves the application of basic science principles to the management of patients. Clinical teaching all too often ignores common acute diarrheal disease, it being considered by many an unpleasant, bothersome, and unimportant disease of children. To counteract this attitude, bedside teaching should emphasize the wide array of basic physiologic principles that can be learned and understood in a patient with diarrheal disease. Students should be given individual responsiblity for the workup of cases and for their presentation to colleagues and visiting staff. When respected professional leaders, particularly in the field of clinical pediatrics, show a great interest in the state of dehydration; in appropriate management of fluid electrolyte deficits as well as the relationship of the underlying principles to fluid and electrolyte absorption; and to common complications such as hypernatremia, hypokalemia, malabsorption, and associated under-nutrition, students will begin to appreciate that diarrheal disease is a complex and all-encompassing clinical problem.

Where possible, laboratory verification of clinical findings should be encouraged in teaching situations, although it should be made clear that this is not necessary for normal case management. Thus, clinical findings of hypernatremia should be verified with serum sodium levels, and the progressive fall in sodium with the use of WHO/ORS should be documented to illustrate the effectiveness of this treatment; such techniques can help eliminate the common but unfounded fear of hypernatremia associated with ORS. Adynamic ileus can be shown to be associated with total body potassium deficits, and acidosis can be measured as well as monitored by respiratory rate and other clinical findings. Etiologic agents can be sought through routine microscopy carried on by students themselves (stool exams for parasites; erythrocytes and white blood cells) and verification with cultures where possible. Again, standard treatment of all cases with ORT will demonstrate the universality of ORT as well as the lack of need for

antibiotic treatment even of recognized pathogens. Dysentery stools can be subjected to scrutiny under the microscope and an appropriate choice of antibiotics determined. Nutritional management of individual cases can be fully discussed and understood with careful observation and recording of foods introducted along with careful attention to stool frequency and composition. This will demonstrate the ability of the intestine to absorb nutrients even in the face of diarrhea.

Effective clinical teaching, particularly in small groups at the bedside with student responsibility for case management, is an all too often neglected area of professional education. Where carried out in large groups making only brief visits to the wards, it is impossible for students to appreciate either the scientific basis for ORT or its effectiveness when used in a clinical setting.

15.3.3 Experiential Training

This area concerns the application of knowledge to actual patient care, creating skills and confidence in the management of medical problems. This is the most crucial part of medical training, the area in which the student gains actual experience in the management of cases of diarrhea. A competency-based assessment of skills in case management should be a prerequisite for graduation; standards for actual number of cases treated, mothers taught, and homes visited should be set and adhered to. Experience has shown that where students have been fully responsible for case management and, under guidance, have conducted clinical assessments and monitored treatment outcome, they are ultimately more effective in practice and in teaching others.

A clinical teaching unit is a virtual necessity in every teaching hospital. The ORT unit may be a separate room, a ward, or simply a corner of an existing pediatric service, but it should contain, at a minimum, appropriate beds for nursing patients with diarrhea; weighing scales; and bedside charts with input and output records, dehydration assessment, and clinical and laboratory findings.

Where possible, a microscope should be present on the ward to allow examination of stools as well as basic tests to confirm complicating infections (white counts, malaria smears, gram stains, etc.). There must be adequate supplies not only of ORS but also of scalp vein needles, intravenous solutions, and a limited range of antibiotics for treating complicated illness.

It is not possible to effectively manage diarrhea in young children without the assistance of the mother or another attendant. It is absolutely essential that mothers be present and fully involved in the management of their children and that educational and motivational materials be readily available to them.

Students should be given responsibility for patients admitted to the unit, from their presentation through to their discharge. Under proper oversight, the students should assess the dehydration of the child on admission and immediately prepare a fluid treatment plan. They should themselves

administer intravenous solutions when necessary and instruct the mother in the administration of ORS. They should be responsible for seeing that the input and output record is properly maintained and regularly analyzed. Weights taken on admission, after rehydration, and daily thereafter will be used to assess not only the adequacy of hydration but also the effect of dietary management.

It is desirable that students take periodic night call, encouraging them to follow patients around the clock. On discharge, the students should provide each mother with appropriate educational guidance, arrange for her re-visit, and prepare the clinical summary and necessary discharge documentation. The students should be responsible for examining the patient on at least one followup clinic visit and, if possible, on a home visit during which they can assess and discuss with the mother adherence to dietary advice as well as environmental factors contributing to diarrhea risk.

Considering the importance of diarrheal disease in developing countries, a month-long rotation on a busy oral rehydration unit during which the students could be expected to take care of 20 or more patients, is a reasonable minimal requirement for health professionals in any country.

15.3.4 Community Outreach

This is the area that provides skills and experience to enable a physician to organize and manage an ORT program for an entire population. While many medical schools provide theoretical experience, there remains relatively little opportunity for students to interact with patients in their homes, observing the impact of culture, environment, and the economy on child health. Minimally, students should be expected to visit children in their homes, assessing the effect of environmental sanitation, child care practices, and economic and commercial realities on the health of the child. Such home visits with appropriate observations and interviews will enable young professionals to better appreciate the determinants of health in their patients, with particular attention to diarrheal diseases and nutrition. Ultimately, these interactions will enable health professionals to be more appropriate and pragmatic in their advice to mothers.

Interaction with the community at large is an important prerequisite to the ability of a health professional to take a role in the public health system, be it at the community, dispensary, health center, or hospital. Opportunities should be made for students to interact with community leaders, traditional healers, and midwives, and to recognize commercial product introduction in the community through pharmacies, grocery stores, promotion of infant feeding, drugs, and other cures.

Students should participate in community meetings to gain a better understanding of the concerns of the community about health. They should participate in efforts to gather community-based data, and learn to use survey methodologies such as cluster sampling, including administration of questionnaires and analysis and presentation of the data. This experience will provide a better appreciation of the importance of epidemiologic data and the difficulties inherent in its collection and interpretation.

Through interaction with a community, students will come to appreciate a view of health services through the eyes of the consumer. They will see the role played by family members, by various traditional health advisors in the community, by private practitioners, by commercial pharmacies, by unauthorized healers of all kinds, and by the government health services. Often they will be surprised to find the relatively unimportant role played by organized health services in the context of the entire spectrum of community health. An appreciation for the determinants of health and for effective means of influencing them through the media, commercial systems, schools, social groups, and word of mouth can be gained only through extensive exposure to communities during professional education.

Classically, professional education has followed the sequence outlined in this section, starting from basic sciences and proceeding to clinical teaching, case management, and community outreach. Increasingly, however, the tables are being turned. Entering students in innovative programs are placed in the community where, with an open and uncluttered, mind they perceive the range of problems in the context in which the problems occur. From there, their education extends to the management of specific clinical problems, with attention given to the sociologic determinants and factors affecting disease incidence as well as outcome. Clinical teaching then leads to a demand for the underlying basic science principles in order to better understand and use the modern tools available. While it appears to many as turning the medical education system upside down, progress in medical education over the past decade has shown that graduates of such a system are better prepared to solve problems in a practical and culturally acceptable way, have greater impact on clinical disease, and make better scientific choices, as well as being capable of assimilating new advances into their clinical skills in the years and decades ahead.

While changes in the medical education system are often hard to bring about, the introduction of improved pedagogic methodology through a national ORT program may do more than simply strengthen the professional support of ORT. It can be the first step in a major and much-needed revolution modernizing education of health professionals.

EDUCATION OF THE HEALTH PROFESSIONS
PART I: PHYSICIANS

ASSESSMENT CHECKLIST:

The following questions have emerged from issues identified in Chapter 15 Part I.

A. Basic Sciences

1. Does the basic science curriculum encompass diarrheal disease and deomnstrate the technical soundness of oral therapies, as specified in Annex I, Curriculum Outline For Medical And Nursing Faciltiies In Developing Countries?

2. Are the basic science courses taught with reference to the realities of clinical practice, especially as regards the management of diarrheal disease?

3. Do teaching methods include audio-visual aids, written material and, where possible, laboratory and clinical demonstrations? Is self-teaching encouraged?

B. Clinical Teaching

1. Does bedside teaching emphasize the basic physiologic principles that can be demonstrated in a patient with diarrheal disease?

2. Is clinical teaching carried out at the bedside, with small groups of students? Do students work up their own cases and present them to colleagues and visiting staff?

3. Do clinical staff, especially in pediatrics, express interest in the multitude of issues that surround cases of dehydration?

4. Where feasible, are students encouraged to support clinical findings in cases of diarrheal disease laboratory tests - with the understanding that this procedure is used for teaching purposes and not for normal case management?

C. Experiential Training

1. Is a competency-based assessment of skills in case management a prerequisite for graduation?

2. Is there an ORT unit for clinical teaching in every teaching hospital, with beds for patients with diarrhea; weighing scales; and bedside charts for recording input, output, dehydration assessment, and clinical and laboratory findings? Is there a month-long rotation for students on this unit?

3. Are mothers of hospitalized children with diarrhea fully involved in the day-to-day management of their children and provided with educational and motivational materials during the hospitalization period?

4. Are students who are assigned to the ORT unit responsible for patient care from admission to discharge, under appropriate supervision? Do they take night call, to follow patients around the clock?

5. Do students counsel mothers when their children are discharged? Do they see the patient on a followup visit? Are home visits ever made to assess adherence to feeding advice along with relevant environmental factors?

D. Community Outreach

1. Are home visits to children a required part of the curriculum? Are opportunities provided for students to interact with community leaders, traditional healers, midwives, pharmacists, and other providers of health goods and services in the private sector?

2. Is there any indication that the classical curriculum sequence is being reversed so as to place students in the community early in their education, then introduce them to case management, and finally present the basic sciences as the grounding for all the clinical experience they have acquired?

PART II: EDUCATION FOR NURSING PERSONNEL

Evelyn Thomas

15.4 INTRODUCTION

The definition of "nurse" depends on the country where the nurse was educated and where she* practices. For the purposes of this section, a professional nurse is defined as a trained person whose education and skills enable her to provide care to the ill and help maintain the health of the well, using informed judgement and the ability to make decisions in equivocal situations. By this definition, she may or may not have a diploma or degree from a recognized school of nursing. The professional nurse bridges the gap between the science of medicine and the needs and understanding of the client, the family, and the community. In the context of today's changing concepts of health care, she is increasingly seen as the teacher and promoter of health maintenance. In this context, her role in OHT programs is - or can be - pivotal.

15.5 EXPERIENCE TO DATE/LESSONS LEARNED

15.5.1 Summary of PRITECH and Other Relevant Findings

As with medical education, PRITECH assessments have not as yet given a great deal of attention to the education of nurses. There is, however, considerable developing-country experience from other projects which can yield the information and lessons necessary for future PRITECH assessments.

A. Educational Requirements

In more highly-developed countries, professional nurses are educated in a four-year baccalaureate program, or in a shorter post-graduate program following the baccalaureate. In developing countries, the formal educational requirements for entering nursing school vary; candidates for nursing school may have as much as twelve years of schooling or as little as eight years. Despite these discrepancies in education, the responsibilities of nurses are fairly uniform from country to country.

B. Activities

In most developing countries, many activities traditionally associated with licensed nurses are actually provided by people who have not fulfilled the requirements for a nursing diploma. These people generally receive special training in caring for the sick and carrying out health promotion activities. For example:**

- In Jakarta, Indonesia, home visitors connected with the kamong clinics or regional polyclinics have had 8 years of schooling before undertaking training for their jobs;

.....

* Although there are male nurses in many countries, the feminine pronoun is used for convenience throughout this section.

** The illustrations cited above have been observed by the writer over the past several years. Because of political and social changes, the current situation may be different in some countries.

- o In Afghanistan, village-level health workers and birth attendants working out of rural health centers generally had about six years of school and were only functionally literate;

- o In Laos, mobile nursing teams from a central hospital successfully implemented an extensive outreach program. The team members had eight years of pre-nursing school education.

- o In Cambodian refugee camps in Thailand, people with 8 years of schooling were trained to provide nursing care in both hospitals and outreach programs.

Despite their wide range of background and educational level, the training of all the service providers in the above examples included ORT. The emphasis may have varied from program to program, but all included some instruction in the causes, outcomes, and treatment of dehydration. It is PRITECH's conviction that these experiences can be generalized to suggest that ORT can be taught to and practiced by people with limited education who are carrying out a variety of nursing tasks.

15.5.2 Summary of Constraints

Although the situation varies among countries, there are a number of common constraints to the incorporation of ORT training in nursing education programs.

A. There is a pervasive lack of knowledge of the advantages of ORT over invasive rehydration procedures.

B. Professionals are often reluctant to consider changes in their approach to rehydration therapy. This reluctance derives from three sources:

- o The simplicity of ORT can pose a threat to the status of nurses who are accustomed to being viewed as special people endowed with special skills.

- o The substitution of ORT for parenteral therapy can be perceived as depriving health providers of a well-established source of income.

- o Educating families in the use of ORT requires new skills, increased time, and great patience on the part of the nurse; many nurses are not comfortable with the challenge this poses to their traditional roles.

C. The families of children with diarrhea may be as resistant to change as the nurses. Families in most parts of the world are accustomed to and comfortable with the health worker "making them well." Appropriate ORT use gives families the responsibility for maintaining the health of their children, an active role that may seem threatening. They may also be dubious that a treatment as simple as ORT can be effective.

D. Total government commitment to an ORT program is rare; lack of commitment can affect every aspect of the program, including nursing education, through the lack of:

- o adequate long-term funding;
- o media support for public education;
- o support from practicing physicians;
- o an infrastructure for in-service education of all health providers;
- o adequate supplies.

E. Local culture and folklore may impede the acceptance of ORT. Untrained traditional practitioners who have the confidence of the public and considerable prestige in their communities may promote treatments that are antithetical to ORT (purging or persistent vomiting; withholding fluids for fevers; withholding food during diarrheal episodes, etc.).

15.4.3 Summary of Options

Inclusion of ORT as a key component of nursing education is most likely to occur in the context of a coordinated ORT program, cutting across all areas of health care. It is within this context that the options for nursing education are discussed.

A. ORT Education: Compartmentalization or Integration?

ORT can either be presented as a separate entity in the conventional curriculum or integrated into all areas of nursing education. PRITECH experience suggests that it is more effective to integrate ORT into as many aspects of nursing as possible. The curriculum can incorporate ORT into the teaching of microbiology, chemistry, environmental sanitation, personal hygiene, and nutrition, to cite only a few possibilities. Although this will require a restructuring of the usual curriculum, it is well worth the effort; not only will ORT become a more central part of the curriculum, but the academic subjects will come to life and become more relevant to the realities of patient care. This approach places ORT where it belongs - as a crucial element in child health, rather than as a separate and limited vertical program.

B. The Nurse: Caregiver or Support?

The nurse's role can viewed either as only a giver of care to a passive recipient or, in addition, as a skilled helper and supporter of responsible family members. PRITECH strongly supports the second option, in keeping with current trends in health care generally and nursing care in particular. This does not imply any less technical skill on the part of the nurse; on the contrary, it requires considerably more ability to transfer one's skills to a family member than to simply administer treatment oneself.

C. ORT Education: For Whom?

Instruction in the use of ORT can be limited to candidates for nursing diplomas or degrees, or it can be part of the training of all those who perform nursing tasks, whatever their educational level. As stated earlier, the reality of health service delivery in developing countries strongly supports the second option. In many places, particularly in satellite/ outreach programs, much of the direct care and teaching of clients is carried out by local birth attendants, village health workers, auxiliary midwives, and other similar personnel. The competency-based curricula of all auxiliary health personnel will need to be restructured to incorporate ORT as one of their most significant responsibilities. A fuller discussion of this topic can be found in Chapter 14, "Training of Personnel for ORT Programs."

Within the reworked curricula, emphasis should be placed on the importance of local health workers as promoters and educators for ORT in the communities they serve. Training should emphasize the importance of a working relationship with child caretakers - usually the mother of a very young child. In most developing countries, it is the local health workers who are most aware of the knowledge, attitudes, and practices of the community towards diarrheal disease. With proper education and supervision, media support, and adequate supplies, they are uniquely suited to play the key role in promotion of ORT and education in its use.

15.6 PROBABLE PRINCIPAL ISSUES

A. Short-term: Retraining and Supplementary Training of Nurses.

Dealing with this issue requires awareness of the distribution and educational preparation of personnel who are providing nursing care at all levels throughout the country . Once the distribution and preparation are known, competency-based training programs should be instigated to help nursing personnel integrate ORT into their activities.

B. Long-term: Complete Restructuring of Nursing Education.

The need here is for revised written curricula with lesson plans that accomplish the following:

- o inform nursing students about all aspects of dehydration and rehydration;
- o emphasize "well nursing" in addition to curative care;
- o include social and psychological aspects of health care;
- o are based on observation, demonstration, practice, redemonstration, and repeated performance of appropriate skills;
- o apply the basic sciences to patient care, rather than teaching them as an end in themselves;
- o redefine the role of the nurse as a support and resource person as well as a caregiver.

C. Government Policy and Commitment

The issue here is the extent to which the relevant government institutions are genuinely committed to the use of appropriate technology, experiential education, and clinical experience as a framework for nursing education. This commitment can be demonstrated not only by stated policies but by the development and beginning implementation of a coherent plan for curricular revision.

D. Testing and Evaluation of Revised Educational Systems

A serious plan for educational reform should have clear objectives and a timetable for meeting them. Periodic evaluation within the responsible government departments, in the educational institutions, and in the field will be essential to determine the extent to which the plan is being adhered to. A truly workable educational plan must be flexible enough to accommodate changes in the plan when indicated by the evaluations.

EDUCATION OF THE HEALTH PROFESSIONS
PART II: NURSING PERSONNEL

ASSESSMENT CHECKLIST

The following questions emerge from the issues identified in Chapter 15 part II.

1. Is there a plan for re-training and supplementary training of nurses based on :
   - o national distribution of nursing personnel?
   - o their levels of professional education?
   - o their levels of basic education?

2. Is there a revised written curriculum for nursing education that will:
   - o inform nursing students about all aspects of dehydration and rehydration?

     emphasize "well nursing" in addition to curative care?

     include social and psychological aspects of health care?

     be based on observation, demonstration, practice, redemonstration, and repeated performance of appropriate skills?

     apply the basic sciences to patient care, rather than teaching them as an end in themselves?

3. Is there a government commitment to educational reform, demonstrated by:
   - o stated policies?
   - o existence of a revised educational plan?
   - o indications of plan implementation?

4. Is there provision for periodic evaluation of the plan and changes when the evaluation suggests them?

PART III: EDUCATION FOR PHARMACISTS

Aida LeRoy
Jonathan Quick
Ann Buxbaum

15.7 INTRODUCTION

Pharmacists are an important resource group of health professionals whose potential role in making ORT programs work is often overlooked. When treated as a respected professional group, provided with the requisite information, and properly encouraged, their interest in and concern for patients can make an important contribution to many aspects of primary health care.

For the purposes of this chapter, our discussion is limited to professional pharmacists. The reality is, of course, that in most countries, ORS may be dispensed by a wide range of people in both public and private sectors, from pharmacists through pharmaceutical technicians and auxiliaries, to local dispensers, community health workers, and shopkeepers. Obviously, their preparation varies from the most rigorous pharmaceutical education to a complete lack of any formal training. This variability in education and training heightens concerns about the ways in which dispensers are prepared to distribute ORS and to educate the consumer in its proper use. Chapter 14, "Training of Personnel for ORT Programs," deals with these issues in the context of lower-level dispensers of ORS.

In appraising the impact of professional education on the pharmacists who dispense ORS, we are concerned first with the level of knowledge of the pathology of diarrheal disease, the signs of dehydration, the appropriate therapies for different phases and etiologies, and the correct use of ORS. Of equal importance is the pharmacist's propensity towards and skill in educating the consumer in all these areas.

15.8 EXPERIENCE TO DATE/LESSONS LEARNED

15.8.1 Summary of PRITECH and Other Relevant Findings

As in the case of physicians and nursing personnel, PRITECH assessments have not focused specifically on the relationship between education for pharmacists and ORT programs. But the general experience of those providing technical assistance has yielded some observations that seem to hold true for many programs in a variety of countries.

The basic task of pharmacists in countries where the pharmacy is a major purveyor of ORS is to keep adequate supplies on hand in warehouses and pharmacies and to use proper storage and handling techniques, so as to guarantee the quality of the product. PRITECH experience in this general area is discussed in Chapter 11, "ORS Supply Management"; as regards pharmacists in particular, there is little indication that professional or in-service education encompasses the particular problems of ORS storage and handling which pertain to length of storage, heat, humidity, and protection from insects and small animals. There is, of course, no assurance that teaching pharmacists appropriate procedures would make implementation any easier, but it is clear that without such information there is little hope for improving and adapting existing storage and handling methods.

Along with maintenance of high-quality supplies, consumer education is another essential task for pharmacists who distribute ORS packets. It should be an easy task as well, given the clarity and simplicity of the treatment, the limited target (primarily mothers of small children), and the dramatic potential for saving lives. In the private sector, instruction on the use of ORS could serve as a wedge for patient-oriented pharmacy practice and an impetus to accurate advice on the purchase and use of over-the-counter drugs. The reality is, however, that many mothers do not recognize the symptoms of dehydration; that pharmacists do not as a rule elicit descriptions of those symptoms from their customers; and that even when dehydration is recognized, most pharmacists do not yet view ORS as an immediately effective treatment, so that they are not likely to promote its use among mothers.

In the context of ORT campaigns, there have been occasional instances in which pharmacists have been actively engaged in promoting ORS and instructing mothers in its use. For example, in an experimental program in Bangladesh where a proprietary ORS product was sold primarily through pharmacies, pharmacists served as instructors for almost all the consumers; even among the literate, fewer than 10 per cent read the package insert. But preparation of the pharmacists for this task was minimal: they were assumed to be familiar with the "concept" of ORS, and they were neither assessed as to the accuracy of their knowledge nor assisted in developing counseling techniques. (One result was that consumer familiarity with and correct use of ORS varied directly with socioeconomic status, reflecting the pharmacists' lack of success in reaching the less accessible portion of the population.)

This example bears out the general impression that in most countries, even when an ORT campaign involves pharmacists, there is little indication that their professional training has appropriately prepared them to educate consumers in the correct use of ORS. This is a major constraint, described in detail in the following section.

15.8.2 Summary of Constraints

A. Limitations in Curriculum

Most colleges of pharmacy include the anatomy and physiology of the gastro-intestinal tract in the general curriculum, as well as the pharmacology of electrolytes, with a clear emphasis on parenteral solutions. But the traditional curriculum often provides misinformation about and over-estimation of the benefits of antibiotic therapy for most forms of diarrhea. It almost never offers the pharmacist-in-training information on the benefits of oral therapy and rarely fosters the requisite skills in patient counseling. Most standard pharmacy textbooks, in fact, do not even include ORT in their compendium of therapeutic agents. These curricular limitations underlie many of the other constraints on active involvement of pharmacists in ORT programs.

B. Pressure from "Detail Men" To Sell More Expensive Products

It is obvious that pharmaceutical manufacturers' representatives have a strong incentive to promote the products that treat diarrhea symptomatically at a higher price and markup than ORS. The susceptibility of pharmacists to

this pressure can only partly be attributed to financial motives; lack of knowledge of the relationship between diarrhea and dehydration and of the appropriate therapies deprives pharmacists of the self-confidence and skill to resist the efforts of the salesmen.

C. Lack of Involvement of Pharmacy Associations

Given the absence of oral rehydration from the undergraduate curriculum, a compensating source of information might be found in continuing education through national Pharmacy Associations. Unfortunately, there has been little attempt in most countries to involve these groups in ORT programs.

D. Lack of Knowledge and Confidence for Consumer Counseling

This constraint clearly derives from a number of sources, including social and economic circumstances, but it is also in part attributable to the lack of appropriate curriculum. The experience of PRITECH teams and other consultants suggests that most pharmacists are unable or unwilling to extend their services beyond the dispensing of drugs. Lack of time may be a factor as well, but without appropriate skills, even a pharmacist with time to spare is unlikely to engage in counseling consumers about the use of ORS.

E. Lack of Skill in Estimating Requirements of ORS

Estimating requirements for ORS is a complex procedure on both a national and local level, with a number of alternative methods as detailed in Chapter 11. Insufficient stock at the pharmacy level can lead to inappropriate substitutions; overstocking can lead to spoilage. Without specific training and periodic updates, it is impossible for most pharmacists to fine tune their supply to projected and actual demand. As seen in numerous ORT campaigns, when demand has been stimulated and cannot be filled, future campaigns are at a serious disadvantage.

15.8.3 Summary of Options

A. Undergraduate education can be improved in a number of ways:

- Existing courses in pathology, physiology, and pharmacology can be more oriented to modern concepts in diarrheal disease: its causes, its relationship to dehydration, and the role of oral therapy in restoring electrolyte balance. The very limited justification of antibiotics in treating most forms of diarrhea should be put into proper perspective.

- The curriculum might include the study of local production of ORS, stressing the role of the pharmacist in overseeing the quality of raw materials and supervising the mixing and packaging process; it might well provide instruction on how to establish a production facility at the hospital level, using simple, inexpensive hand-packing methods.

- o The importance of consumer education/counseling should be emphasized, with hands-on training in the requisite skills, including particularly evaluation of patient status and maintenance of up-to-date information on every aspect of diarrheal disease and oral therapy.

- o Textbooks should be revised to cover all topics relevant to diarrheal disease and appropriate therapies.

B. There are also possible options for the improvement of postgraduate education:

- o Pharmacy Associations should be vigorously recruited as participants in ORT campaigns and active purveyors of information to practicing phamacists through short courses, newsletters, pamphlets, meetings, etc.

- o Drug Information Centers might be established in hospitals or other centralized facilities to serve as resources for pharmacists, physicians, nurses, and non-professionals seeking information on various aspects of ORT. Where such centers exist, ORT should become a prominent focus of their services.

- o Through either of the above or any other available channel, practicing pharmacists should be offered training in estimating ORS requirements as well as in storing and handling packets to minimize spoilage.

15.8.2 PROBABLE PRINCIPAL ISSUES

A. As with any entrenched educational system, effecting changes in a pharmacy school curriculum cannot be accomplished overnight. Until there is a wellspring of enthusiasm from many quarters - senior faculty, leaders in the Pharmacy Association, pharmacists who are decision-makers in the higher levels of the MOH, practicing pharmacists who have status within the private sector - changes in professional education are unlikely to come about.

B. Even with a curriculum that strongly supports ORT, the sale of packets is often less lucrative for practicing pharmacists than the sale of anti-diarrheals, antibiotics, and intravenous solutions. It is wise to recognize the financial penalty that may be imposed on pharmacists who have to relinquish a substantial proportion of the more lucrative therapies and to consider appropriate incentives and rewards. This will not only benefit patients directly in making ORS more readily available, but will also help dissipate resistance to changes in the undergraduate curriculum.

C. A shift to the promotion of ORT must be accompanied by better logistical methods. Although this issue is treated fully in Chapter 11, it is essential to keep it in mind when considering educational reforms: the role of pharmacists in local production, in estimating requirements, and in overseeing the ORS pipeline cannot be overlooked if genuine changes in practice are to take place.

D. The involvement of pharmacists in ORT requires that they have easy access to reliable and current information about diarrheal disease and the recommended therapies. Whether the source is the Pharmacy Association, a Drug Information Center, a hospital, or any other, there must be a group of pharmacists screening information from pharmaceutical manufacturers, selecting journal articles, keeping abreast of WHO publications, and presenting a thorough and cohesive body of knowledge to pharmacists who rely on this information to serve the consumer knowledgeably and well.

EDUCATION OF THE HEALTH PROFESSIONS
PART III: PHARMACISTS

ASSESSMENT CHECKLIST

The following questions emerge from issues identified in Chapter 15 part III.

1. Is there a commitment to integration of ORT into pharmacy education among senior faculty, leaders in the Pharmacy Association, pharmacists who are decision-makers in the MOH, influential practicing pharmacists in the private sector, etc.?

2. Is the sale of ORS packets less lucrative for private-sector pharmacists than the sale of other generally-promoted therapies? If so, what efforts have been/are being made to create incentives for pharmacists to promote ORS?

3. What role do pharmacists play in local production, estimating requirements, and in overseeing the ORS pipeline?

4. What sources of information on diarrheal diseases and therapies are available to pharmacists? How current is this information? How accurate? How accessible?

ANNEX I

CURRICULUM OUTLINE
FOR PHYSICIANS AND PROFESSIONAL NURSES

1. Does each student understand and can he/she describe the sociologic, microbiologic, physiologic, immunologic, epidemiologic, and clinical factors affecting the susceptibility, clinical illness, treatment, and recovery from diarrheal diseases of all etiologies and clinical types?

2. Have specific instructional objectives been developed for each discipline area/

3. Does content in each major discipline include the following?

ANATOMY Structure of the intestinal track, circulation to the intestine and particular attention to the micro- histology at all levels.

PHYSIOLOGY Absorption of electrolytes and water, mechanisms to include cyclases, ATPase, ion gradients, calcium channels.

Nutrients: Hexoses, other carbohydrates, amino acids, dipeptides;
Digestion: Function of each level of the gut for different types of foods.
Dehydration: The effects on different organ systems by degree of fluid and electrolyte deficit: circulation, respiratory, renal, brain.

Normal electrolyte levels and imbalances: sodium potassium, anions, acid base, normal mechanism of homeostasis and results of imbalance.

BIOCHEMISTRY Thermodynamic considerations in coupling and transport mechanisms (this may well be covered in physiology).

IMMUNOLOGY Protective mechanisms related to diarrhea: acid barriers, peristalsis, mucus, role of normal intestinal flora, secretory antibodies, antigen processing by the gut, gut response to pathogens, nutritional effect on immune function.

MICROBIOLOGY Normal flora and their role.

The infection process and details of specific diarrhea related pathogens: viruses, toxin producers, invasive bacteria, parasites.

PATHOLOGY Changes in gut morphology with types of infection: virus, dysentry, parasites, toxin.

Malnourished intestine, its appearance and function.

Immune system and its relationship to pathologic states in the intestine.

PHARMACOLOGY Anti-microbial agents relevant to diarrhea causing pathogens - action, indication, danger.

Anti motility agents - action, danger.

Anti-secretory agents.

Other "anti-diarrheals" - include traditional medicines.

EPIDEMIOLOGY Transmission of infectious agents, risk groups: time, person, place of etiology, age, etc.

PUBLIC HEALTH Water, sanitation, environment, personal hygiene and their relationship to diarrheal diseases, public health administration, health planning, program management.

PEDIATRICS Growth and development of young children with specific attention to growth in the early months and years.

Nutrition and Diarrhea: Feeding during and after diarrhea.

Catch up growth and past diarrhea feeding.

Susceptibility to diarrhea and the effects on growth.

Clinical Signs and Symptoms: Acute diarrhea, dehydration, electrolyte imbalance, complications such as lactose intolerance, septicemia.

Clinical Management: Rehydration, fluids, quantities, electrolytes, methods of infusion, intravenous, other parental.

Treatment of the causative agent.

Complications in clinical diarrhea, their diagnosis and management.

Organizing the rehydration unit, establishing norms of treatment, nusring care, role of mothers, educational approach, record keeping.

SOCIOLOGY AND BEHAVIORAL SCIENCES Attitudes, beliefs, practices effecting diarrhea, appreciating and finding out how these effect the clinical manifestations, treatment and risk of diarrhea.

Dealing with mothers, personal communication skills, media and message transfer.

The environment of poverty and its relationship to diarrheal diseases.

Breastfeeding and factors affecting it.

COMMUNITY OUTREACH Teaching, supervising, planning, community-based programs, mobilizing lay public support and understanding of diarrhea problems and appropriate responses. (This is best taught in continual field experiences and recurrent direct community contact.)

CASE STUDIES TO ILLUSTRATE CLINICAL MANAGEMENT

1) Acute dehydration, signs, symptoms and treatment of simple case.

2) Case of relapse with introduction of milk: lactose intolerance.

3) Dysentry and accompaning acidoses, bottle feeding and hypernatremia.

4) Refeeding in marasmic child with chronic diarrhea.

5) A case of gastrectomy with cholera.

6) Rotavirus and vomiting.

7) Onset of acute diarrhea with first introduction of weaning foods.

8) Case of chronic diarrhea with both fluid and fluid witholding by mother due to local beliefs and customs.

9) Case of hypernatremia due to improper homemade solution.

Each case will be written as a clinical presentation and a series of questions regarding diagnosis and management, requiring an understanding of the underlying physiology, etiology and pathology. Cases could be designed for either discussion or self-correcting questions such as appear on board exams. Accompaning teachers' quides would use each case study to illustrate major points of etiology, diagnosis, treatment, and management of diarrheal cases.

CHAPTER 16: SUGGESTED RESOURCES

The following list of individuals, institutions, and documents are likely to be useful to anyone carrying out an ORT program assessment. It is supplemented by a section listing additional resources for specific technical areas, keyed to the appropriate chapters of this manual. All the listings are only suggestions; it is our assumption that each consultant will seek out the resources that are particularly appropriate to his or her assignment.

GENERAL RESOURCES FOR ALL CONSULTANTS

A. HUMAN RESOURCES

1. Mission Personnel
   - o Mission Director
   - o Health, Education, and Program officers

2. Ministry of Health
   - o Directors of primary health care and child survival activities
   - o Members of diarrheal disease committee, director of CDD program, and program staff
   - o ORT program director and staff
   - o Staffs of health facilities at all levels

3. International Community
   - o Representatives of WHO, UNICEF, UNESCO, World Bank, Peace Corps, Centers for Disease Control, and other bilateral assistance agencies

4. Representatives of the Health Professions
   - o Representatives of national medical, pediatric, nursing, and pharmacy associations
   - o Leading specialists in infant diseases
   - o Representative of medical and pediatric faculties at leading medical schools
   - o Representatives of nursing and pharmacy schools

5. Private Sector
   - o Representative of each PVO working in the health sector
   - o Representatives of coops that provide health services
   - o Private medical practitioners
   - o Community health workers, pharmacists, and traditional medical practitioners

6. Informants on Social and Cultural Issues
   - o Anthropologists
   - o Health researchers
   - o Members of religious groups
   - o Peace Corps members
   - o Expatriate field workers

B. WRITTEN RESOURCES

1. In the US
   - o PRITECH Assessment and Planning Manual
   - o Consultant and donor reports (available at PRITECH Information Center).
   - o WHO Manual for the Planning and Evaluation of National Diarrhoeal Disease Control Programmes (WHO/CDD/SER/81.5 REV.1 1984)
   - o USAID Health Sector Assessments

2. In-Country
   - o Census and demographic reports, field surveys carried out in last several years
   - o Service statistics
   - o Consultant reports
   - o National ORT program plan
   - o CDD policies and plans
   - o Current health statistics, special surveys, research reports, and hospital data on ORT use
   - o USAID Country Development Strategy Statement (CDSS), relevant project documents, and evaluations
   - o MOH annual reports
   - o Reports of relevant MOH units (primary health care, maternal/child health, epidemiology, research, etc.)

RESOURCES FOR SPECIFIC TECHNICAL AREAS, KEYED TO APPROPRIATE CHAPTERS

A. HUMAN RESOURCES

1. Ministry of Health
   - o Senior policy planners (ch. 4)
   - o Head of ORS supply and distribution (chs. 4, 10, 11)
   - o Senior staff member in food and drug regulation (chs. 4, 10)
   - o Senior staff member in food and drug pricing (chs. 4, 10)
   - o Heads of:
     - health education (chs. 5, 9, 14)
     - training (chs. 5, 14)
     - rural services (chs. 5, 11)
     - hospitals (chs. 5, 10, 13)
     - medical, nursing, and pharmacy education (chs. 5, 15)
     - finance (chs. 5, 6, 7)
     - logistics (chs. 5, 7, 8, 10, 11, 12)
     - transport (chs. 5, 7, 10, 11)
     - epidemiology (chs. 5, 7)
     - pharmaceutical regulations (ch. 10).

2. Other Ministries
   - o Social Welfare (ch. 5)
   - o Education: A-V Production/Curriculum; Adult/Nonformal Education; Rural Education; Medical Education (chs. 5, 9)
   - o Planning (chs. 5, 6)
   - o Social Affairs/Social Security (chs. 5, 8, 9)
   - o Agriculture (chs. 5, 9)
   - o Religious Affairs (chs. 5, 9).
   - o Finance/National Budget Office (chs. 5, 6)

3. International Community
   - o WHO production experts, for world prices of ORS components and current UNIPAC prices (ch. 10)

4. Private Sector
   - o Representatives of pharmaceutical manufacturing companies (chs. 8, 9, 10, 11, 12)
   - o Producers of processed foods (chs. 10, 12)
   - o Distributors of non-pharmaceutical products (chs. 8, 9, 10, 11, 12)
   - o Managers of local drug, food, and general stores (chs. 7, 8, 11, 12)
   - o Advertising agencies: Leading consumer marketing and market research firms (ch. 9)
   - o Packaging companies (chs. 9, 10, 12)

5. Media Community
   - o Radio and TV station managers and operators (ch. 9)
   - o Producers of cinema, publishers of newspapers, magazines (ch. 9)

B. WRITTEN RESOURCES

1. In the US
   - o World Bank, IMF, regional Development Bank documents (ch. 6)

2. In-Country
   - o National development plan and national budget (chs. 5, 6)
   - o Statements on ORS formulation (chs. 5, 10)
   - o Regulations on pricing and profits of pharmaceutical and relevant food products