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**SERVICE QUALITY ASSESSMENT
SERIES**

**ORAL REHYDRATION THERAPY IN
DIARRHEAL DISEASE CONTROL**

**A REVIEW OF EXPERIENCE
IN EIGHT COUNTRIES**

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PREFACE

Since 1985 PRICOR¹ has assisted Ministries of Health and private groups in 12² developing countries to systematically analyze the delivery of child survival services at the periphery. Depending upon local priorities, these systems analyses have examined one or more of six essential child survival interventions: oral rehydration therapy (ORT), growth monitoring, immunizations, the treatment of acute respiratory infections, malaria, and maternal care. For each intervention, the studies have analyzed service delivery and critical support systems at the periphery: in homes, at the community level, and at first-line health facilities. These systems analyses have employed direct observation and systematic quantification of task performance, using measurement instruments derived from the PRICOR Primary Health Care Thesaurus, a detailed compendium of significant health worker tasks. By documenting specific areas of strength and weakness in service delivery and support activities, the analyses enable the health manager to identify operational problems and target corrective actions more precisely. Accordingly, systems analyses have been followed, in most cases, by problem solving operations research studies or administrative adjustment.

This report is one of a series of PRICOR services quality assessments based on systems analyses and operations research studies. This series presents comparative reviews of results from these analyses that document multi-country program experience, using standardized task definitions and more precise measurement techniques than previously thought possible. The results add significantly to knowledge of program operations and their common problems. The objective of this report series is to identify operational problems commonly faced by primary health care and child survival programs as well as to describe solutions that PRICOR-supported district managers and supervisors have devised and tested for improved quality of care. While country programs are discussed alongside each other, the objective is not to evaluate relative performance, but rather to illustrate international variations and shared problems.

Reflecting the structure of the thesaurus, the comparative framework employed in this report on oral rehydration therapy (ORT) consists of service delivery including clinical assessment, treatment, patient counseling and health education, plus three essential ORT support services: logistic support, supervision, and training. To the degree feasible, all of the essential tasks that must be correctly performed to carry out oral rehydration therapy are enumerated and performance variants described. Because of its critical importance in case management, information obtained about mothers' ORT knowledge and practice is also included.

This report and others to follow summarize findings from systems analyses within PRICOR's comparative framework. Comments on the series are invited and should be submitted to Dr. Jeanne Newman.

¹ The PRICOR (Primary Health Care Operations Research) Project is operated by the Center for Human Services (Bethesda, MD, USA) for the United States Agency for International Development.

² Colombia, Costa Rica, Haiti, Indonesia, Niger, Pakistan (Punjab and Regi Province), Peru, Philippines, Senegal, Togo, Thailand, and Zaire.

EXECUTIVE SUMMARY

ORAL REHYDRATION THERAPY IN DIARRHEAL DISEASE CONTROL

A Review of Experience in Eight Countries

Viewed as a simple, inexpensive, and highly effective technology for reducing childhood diarrhea mortality, oral rehydration therapy (ORT) has been widely promoted as one of the more important child survival interventions. Over the last decade, considerable progress has been made in making ORT available and accessible. This comparative review of PRICOR studies brings together information on the performance of ORT services in a number of diverse LDC countries in order to draw some conclusions about where ORT programs may need to place their efforts in the coming years.

The Primary Health Care Operations Research (PRICOR) Project has developed an approach to assessing the performance of health workers. This approach, termed systems analysis, uses a systems framework to document how service delivery and essential support activities are actually being carried out. PRICOR, in collaboration with ministries of health and private voluntary organizations, carried out nine systems analyses of ORT activities in eight countries: Colombia, Niger, Pakistan,¹ Peru, Philippines, Senegal, Thailand, and Zaire. In addition, close to thirty operations research studies have been or are being conducted on aspects of ORT service delivery.

PRICOR's systems analyses focused on systematic observation of health workers performing clinical assessment, treatment, counseling, and group health education tasks for diarrhea case management. In addition, exit interviews were conducted in some countries to verify whether mothers understood what they had been told. Support activities, such as logistics, training and supervision, were also reviewed, through observation, record reviews, and interviews with health workers and supervisors. In some studies, household surveys were also conducted with community members to determine general levels of health knowledge and practice.

Even though there were some differences in the types of workers observed, sampling strategies, and data collection methods among these nine systems analyses, it has been possible to identify some common areas of strength and weakness in the delivery of ORT services, and to suggest ways in which the quality of some of the components might be improved.

The strengths found fairly consistently across all programs included:

- Most health centers had oral rehydration salts (ORS) in stock.
- In general, supervisors were visiting health workers.
- Most health workers had received training in ORT within the past three years.

¹ In Pakistan, two separate systems analyses were conducted, making a total of nine systems analyses reported in this comparative review on ORT.

- Both community-based and clinic-based health workers were prescribing ORT for most diarrhea cases they encountered, and most explained to mothers how to prepare the solution.
- Most mothers knew about the existence of ORS and salt-sugar solution (SSS) and many knew how to prepare ORS.

These strengths reflect efforts made by Ministries of Health and International organizations to institutionalize oral rehydration therapy in diarrhea case management.

However, some important problems were also frequently revealed in these nine systems analyses:

- Health workers' clinical assessments are generally cursory, especially among community-based workers. As a result, management based on an accurate assessment of hydration status is uncommon.
- Many workers still prescribe antibiotics and antidiarrheals along with ORS.
- Community-based workers are having problems with recipes for home-mix.
- All levels of health workers fail to communicate effectively with mothers and other community members about *administration* of ORT and other aspects of diarrhea case management.
- The content of support system activities (training, supervision, and logistics) are not addressing the above deficiencies.
- Mothers' use of ORT is still low.

Systems analyses showed that less than half of diarrhea episodes enter the formal ORT system, and when they do, most health workers recommend ORT for home use, but they do *not* administer it in the clinic. Therefore, mothers still carry out the majority of diarrhea case management tasks in the home.

Even when a mother visited a health care provider, history taking and physical exams were often poor, especially among community-based workers. Many clinic-based workers did little probing to identify other types of diarrhea or to assess hydration status, information necessary to provide appropriate case management and referral. In addition, many of these signs and symptoms to be identified during history and physical exam are those that mothers should be able to identify in the home. Health workers *not* performing these preclude mothers from gaining role-models for their own performance.

In the majority of cases observed, health workers prescribed ORT. However, community-based health workers are still experiencing problems with SSS recipes. This argues for encouraging the use of other rehydration solutions, such as home-available fluids in rural settings, especially where workers and mothers are illiterate and ORS may be difficult to obtain.

Health workers generally gave mothers instructions on preparation of the ORT solutions they prescribed. Yet, few counseled mothers on the quantity to give and frequency for administration. Because ORT is not like other medications which are given in small amounts at specified intervals, it is important that mothers understand how they should be administering ORT to their children.

Also lacking in counseling efforts were messages on feeding practices and giving extra fluids. These practices are important, not only for the child's state of dehydration, but also for reducing subsequent malnutrition problems.

Educational and communication techniques also needed improvement. Few health workers demonstrated the preparation or administration of ORT to the mothers, and almost none asked the mother to repeat the instructions or asked if they had any questions. With counseling activities as cursory as were seen in the systems analyses, it appears that mothers have not yet been convinced or felt empowered to carry out diarrhea case management activities on their own: mothers' home use of ORT was still low, ranging from 7% to 47%.

In spite of the compelling need for better counseling and education, supervision and training activities in these eight countries did not address quality of care deficiencies in diarrhea case management and health education. ORT training focused mainly on use and preparation of ORT solutions. Especially because many of the diarrhea case management tasks are to be carried out by the mother, counseling should be a major part of the health worker's ORT tasks. As they are not normally part of health workers' basic training, counseling skills need to be developed and reinforced through on-going training and supervision.

Interviews with health workers and supervisors showed that, although supervisors are meeting with health workers, they rarely observe health workers carrying out diarrhea case management or health education. Supervision focused mostly on administrative issues and did not address quality of care issues in diarrhea case management. When supervisors were asked how well they thought health workers were performing certain tasks, they tended to overestimate performance. When supervisors were asked to observe worker performance, they generally did not provide feedback. They tended to focus on treatment and preparation of ORT, ignoring health worker performance deficiencies in other areas.

ORT programs have made great progress in promoting ORT as the appropriate treatment for diarrhea. Yet, two major areas of inadequacy were common across all countries studied, indicating that they are probably weak in other countries as well: communication/counseling and supervision. The advantages that have been gained in the promotion of ORT can be consolidated by strengthening the support service network so that it places priority on these aspects of worker performance. Efforts to improve counseling will make mothers better able to manage diarrhea cases in the homes and bring cases to the attention of health care providers when appropriate.

Improved supervision that gives attention to identifying and helping health workers solve problems can assure the quality of health worker performance. These systems analyses have demonstrated that, through observation of worker performance, problems can be identified and corrective action initiated. Supervisors can use these same techniques to identify and resolve problems and thus have a positive impact on the quality of services delivered.

TABLE OF CONTENTS

<i>Preface</i>	i
<i>Executive Summary</i>	ii
1. Introduction: Service Quality Assessment of Oral Rehydration Therapy in Eight Countries	1
1.1 Oral Rehydration Therapy (ORT): Increasing its potential impact in developing countries	1
1.2 Assessing Quality of Care in ORT Programs: the PRICOR Approach.....	1
1.3 The Oral Rehydration Therapy (ORT) System	2
1.4 Systems Analysis Methodology	4
1.5 Nine Systems Analyses on ORT.....	6
1.5.1 Systems Analyses In Africa.....	6
1.5.2 Systems Analyses In Asia.....	7
1.5.3 Systems Analyses In Latin America	8
1.6 Overview of the ORT Comparative Review.....	9
2. Results of Service Quality Assessment of Oral Rehydration Therapy	11
2.1 Service Delivery.....	11
2.1.1 Clinical Assessment	11
2.1.1.1 History-Taking.....	13
2.1.1.2 Physical Examination	13
2.1.1.3 Classification by Severity of Dehydration.....	13
2.1.2 Treatment	15
2.1.3 Counseling of Mothers and Health Education	17
2.1.3.1 Individual Counseling During Treatment	17
2.1.3.2 Group Health Education Sessions.....	20
2.1.3.3 Community Outreach through Home Visiting.....	21
2.2 Mothers' Knowledge and Practice.....	21
2.2.1 Mothers' Knowledge During Exit Interviews	21
2.2.2 Mothers' Knowledge and Practice from Household Surveys.....	23
2.2.3 Knowledge about ORT in the Community.....	23
2.3 Conclusions about Service Delivery.....	24
3. Assessment of Support Services Related to Oral Rehydration Therapy	25
3.1 Introduction.....	25
3.2 Logistics and Supplies.....	25
3.3 Supervision.....	26
3.3.1 Frequency and Duration of Supervision Encounters.....	27
3.3.2 What Supervisors Do During Supervision	27
3.3.3 Supervisor's Knowledge of Problems in Health Worker Performance	28
3.3.4 Observation of Supervisory Encounters.....	31
3.3.5 General Conclusions about Supervision	33
3.4 Training.....	33
3.5 Conclusions.....	35
4. Conclusions: Strengths and Weaknesses In ORT Service Delivery	36
4.1 Conclusions.....	36
4.2 Use of Results in the Eight Country Studies	38
4.3 Recommendations for Future Directions.....	39

Appendix: Selected Sections on ORT from the PRICOR Primary Health Care Thesaurus

TABLES

Table 1-1	Components of the ORT System	5
Table 1-2	PRICOR Systems Analyses: Types of Data Collection and Sample Sizes by Country.....	10
Table 2-1	ORT Service Delivery: Observations of Health Workers Carrying Out Clinical Assessment.....	12
Table 2-2	ORT Service Delivery: Observations of Health Workers Carrying out Treatment	16
Table 2-3	ORT Service Delivery: Observations of Health Workers Counseling Mothers.....	18
Table 2-4	Mothers' Knowledge and Use of Oral Rehydration Therapy.....	22
Table 3-1	Observation of Supervisory Encounters for ORT Activities	32
Table 4-1	Operations Research as an Outcome of ORT Systems Analyses.....	40

FIGURES

Figure 1-1	Oral Rehydration Therapy Systems Model.....	3
Figure 2-1	Percent of Observed Diarrhea Patients Receiving Physical Examination.....	14
Figure 2-2a	Patient-Community Worker Encounters: ORT Prescription and Counseling.....	19
Figure 2-2b	Patient-Clinic Worker Encounters: ORT Prescription and Counseling.....	19
Figure 3-1a	Philippines: Supervisory Impressions of Frequency of Task Performance by Health Workers Compared to Performance.....	29
Figure 3-1b	Senegal: Supervisory Impressions of Acceptable Clinic-Based Worker Performance Compared to Observed Performance.....	29
Figure 3-1c	Senegal: Supervisory Impressions of Acceptable Community-Based Worker Performance Compared to Observed Performance.....	30
Figure 3-1d	Niger: Comparison of Supervisory Impressions of Acceptable Performance and Observed Worker Performance.....	30

1. INTRODUCTION: SERVICE QUALITY ASSESSMENT OF ORAL REHYDRATION THERAPY IN EIGHT COUNTRIES

1.1 ORAL REHYDRATION THERAPY (ORT): INCREASING ITS POTENTIAL IMPACT IN DEVELOPING COUNTRIES

Two decades ago, scientists in South Asia first demonstrated that an oral solution of water, glucose, and salt could be used effectively in treating cholera. Shortly after, this same oral solution was found to be equally effective against all forms of acute dehydration from diarrhea. Recently, in Egypt, a reported reduction in diarrheal mortality has been attributed to the successful implementation of a national Oral Rehydration Therapy (ORT) program for combatting deaths from dehydration.¹

Oral Rehydration Therapy (ORT) is defined by WHO/UNICEF as the administration of fluid by mouth to prevent or correct dehydration that is the consequence of diarrhea. Although there was a 10-year time lapse between the discovery of ORT's effectiveness and its serious promotion, considerable progress has been made in making ORT services available in developing countries. As reported in the ICORT III Meeting (1988),² almost all countries in the developing world have programs to control diarrheal disease. The annual world production of oral rehydration salts (ORS) packets has reached 330 million in 1987. Through the aid of UNICEF, two-thirds of these packets are being produced in developing countries. Finally, the percentage of the population in developing countries having access to a regularly trained provider of oral rehydration therapy has increased from 6% in 1983 to 60% in 1986.

In spite of this progress in availability and access to ORT, some 10,000 children under five still die each day of diarrhea and the associated dehydration, with diarrhea accounting for more than 25% of all child deaths. Thus, efforts still need to be made to further increase the impact of these programs. If the process of ORT is not correctly implemented or if counseling to mothers is poor, efforts to increase availability and access will not have the desired impact on diarrhea mortality.

Improving the quality of diarrhea case management requires knowledge of which aspects of diarrhea care are performed inadequately by health personnel or by the mother. ORT programs often only have information on the number of ORS packets distributed, homes visited, or children treated for diarrhea in the clinic. The process of care itself is usually like a "black box," and thus, the manager does not have information to help him or her understand specific service delivery problems that may require solving.

1.2 ASSESSING QUALITY OF CARE IN ORT PROGRAMS: THE PRICOR APPROACH

The Primary Health Care Operations Research (PRICOR) Project has developed an approach to assessing the performance of health workers in order to shed light on what goes on inside the

¹ M. El-Rafie, W. A. Hassouna, N. Hirschorn, S. Lora, P. Miller, A. Nagaty, S. Nasser, S. Riyad, "Effect of Diarrhoeal Disease Control on Infant and Childhood Mortality in Egypt." The Lancet, v. 335 (February 1990).

² ICORT III, International Conference on Oral Rehydration Therapy, Proceedings. Washington: U.S. Agency for International Development (1989).

"black box." This approach, termed systems analysis, uses a systems framework to document how service delivery and essential support activities are actually being carried out. Since much information is already available on resources and outputs, the systems analysis has focused on process: how resources are transformed into services. Systems analysis examines what health workers are doing and how they are doing it. The systems analysis provides information necessary for the identification of specific service delivery problems or obstacles to the implementation of quality care. Following the systems analysis, corrective action may be taken, or if appropriate, operations research (OR) may then be used as a tool for determining what actions are best suited for strengthening these services.

Since 1985, PRICOR has worked with 12 developing countries to document and analyze primary health care (PHC) and child survival service delivery in order to identify and resolve problems through direct action or through OR studies. Systems analyses of ORT activities were carried out in 8 of the 12 countries: Colombia, Niger, Pakistan,³ Peru, Philippines, Senegal, Thailand, and Zaire. In addition, close to 30 operations research studies have been or are being conducted on aspects of ORT service delivery. This report presents results of systems analyses in these eight countries.

1.3 THE ORAL REHYDRATION THERAPY (ORT) SYSTEM

Oral Rehydration Therapy (ORT) is designed to prevent or correct dehydration that results from diarrhea. The two most common oral rehydration solutions are:

- Oral Rehydration Salts (ORS): prepared from a pre-packaged mixture of glucose and salts⁴
- Salt-Sugar Solution (SSS): a home mixture of sugar and salt, made up generally of 2 level tablespoons of sugar, a half teaspoon of salt, and one liter of water.

These solutions are to be administered orally at the onset of diarrhea and continued until the diarrhea has stopped.

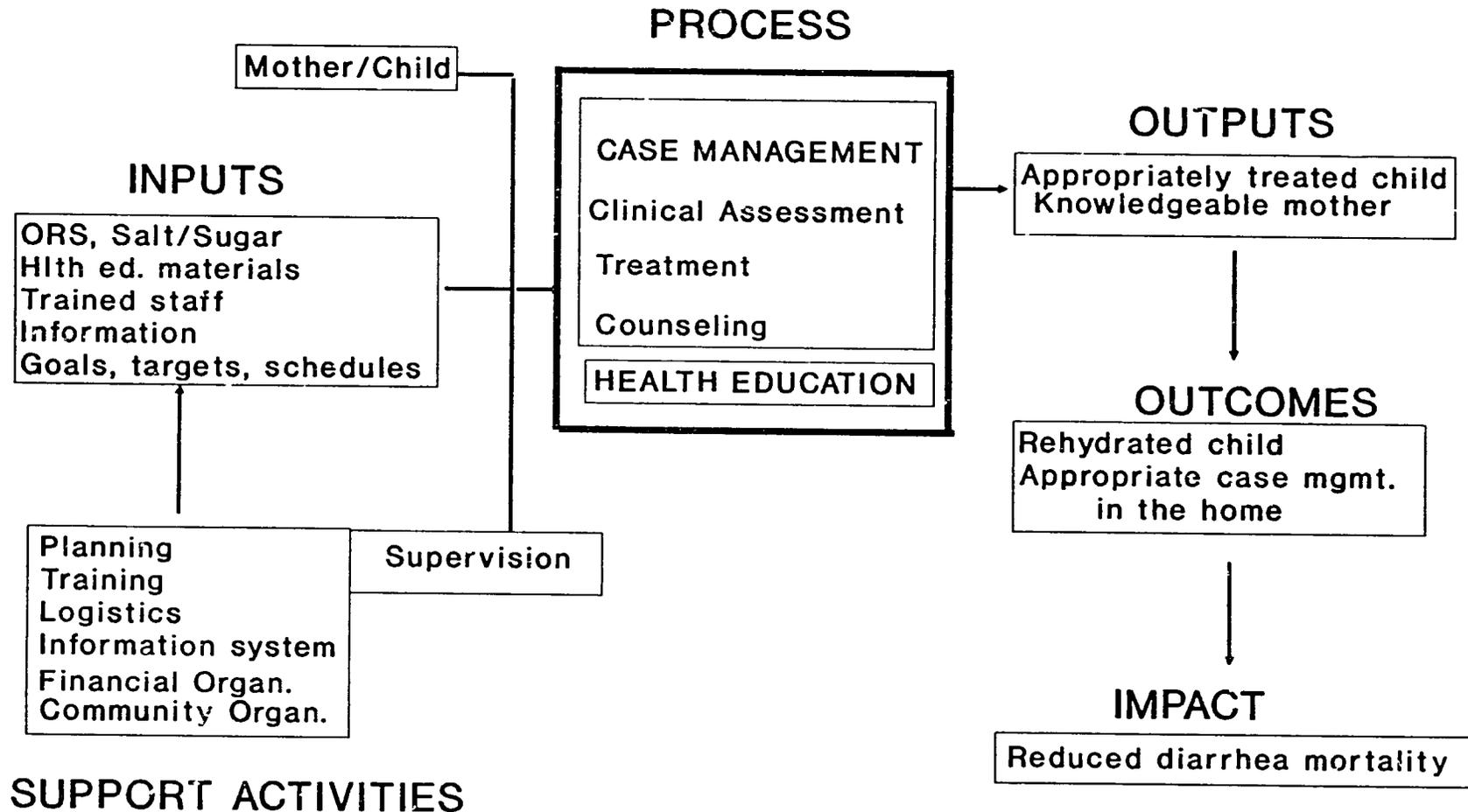
The oral rehydration therapy (ORT) system can be described as a set of activities to be carried out to rehydrate a child and avoid deaths due to dehydration. The ORT service delivery system consists of case management, health education and counseling, planning, training, supervision, logistics, community organization, financial management, and information subsystems. Each subsystem consists of a set of activities. Together, these subsystems interact to produce outputs (treated children and/or knowledgeable mother) and to reduce deaths from dehydration.

For example, as seen in Figure 1-1, at the entrance to the system is the mother or caretaker who recognizes diarrhea in her child. She may then either treat the child at home or take the child to a health care provider. For the health care worker to provide appropriate case management, he or

³ In Pakistan, two separate systems analyses were conducted, making a total of nine systems analyses reported in this comparative review on ORT.

⁴ The formula for ORS recommended by WHO is composed of three salts: sodium chloride (3.5 gms), potassium chloride (1.5 gms), and trisodium citrate dehydrate (2 gms), in addition to glucose (20 gms), all of which is dissolved in one liter of water.

Figure 1-1
ORAL REHYDRATION THERAPY SYSTEMS MODEL



she must take a medical history and do a physical exam. This information allows the health care provider to classify the child's state of dehydration and to prescribe the correct treatment. The health care provider must provide counseling to the mother or caretaker on what she must do regarding follow-up treatment, preparation/administration of ORT, and prevention of diarrhea. The mother in turn must understand, accept, and carry out the activities required for effective case management in the home.

1.4 SYSTEMS ANALYSIS METHODOLOGY

The systems analysis methodology consists of breaking down the above activities into observable tasks and subtasks, identifying appropriate indicators of their performance, and measuring their implementation in order to detect problems in quality of care. Table 1-1 presents a list of activities comprising the ORT system, based on the PRICOR Thesaurus.⁵ Based on staff experience, expert opinion, and WHO guidelines, PRICOR developed this thesaurus for seven child survival interventions, including oral rehydration therapy. The thesaurus contains a list of tasks and subtasks for each activity, such as those in Table 1-1. It also includes indicators for the measurement of their performance, and suggested information sources. The appendix contains part of the Thesaurus' section on ORT, showing the tasks and subtasks involved in the activities listed in Table 1-1.

This thesaurus provided the basis for developing data collection instruments to document the process of ORT delivery in the eight countries examining ORT in their systems analyses. The actual application of the systems analysis methodology differed somewhat in the eight ORT countries, depending upon the specific health system being documented. However, in all cases the application of the basic PRICOR systems analysis methodology started with collaboration with the Ministry of Health, PVO, AID missions, or other responsible agencies to identify primary health care/child survival subsystems and geographic areas of principal interest. Together, they developed criteria for the selection of localities and facilities for study, and selected a sample of health facilities for study, generally from among the best and poorest performing health centers and health posts in roughly equal proportions. Given the limitations of resources and time, no attempt was made to achieve a statistically representative sample of the whole country. It was felt that looking at the centers which perform better would identify problems, not only in those centers, but also throughout the whole system.

PRICOR staff and their local country counterparts developed data collection instruments to document what is actually happening in the delivery of primary health care/child survival interventions. Specific importance was attached to the systematic observation of health workers in the performance of primary health care/child survival activities and tasks. For ORT, this meant treatment by health workers and counseling. In addition, exit interviews were conducted in some countries to verify whether mothers understood what they had been told. Support activities, such as logistics, training, and supervision, were also reviewed, through observation, record reviews, and interviews with health workers and supervisors. In some studies, household surveys were also conducted with community members to determine general levels of health knowledge and practice; in some cases these interviews have also served to corroborate the research observations made in the service delivery setting and to gauge whether findings about mothers'

⁵ Primary Health Care Thesaurus, Volumes I and II. PRICOR, Center for Human Services, Bethesda, MD.

TABLE 1-1

COMPONENTS OF THE ORT SYSTEM

SERVICE DELIVERY

Case Management

- make clinical assessment
- administer appropriate treatment (or referral)
- provide counseling

Motivation and Education for Mothers and Other Community Members

- transmit key messages and skills through group education, home visits, etc.
- use appropriate counseling techniques and methods

SUPPORT SERVICES

Planning

- set ORT objectives
- set targets (specify age groups, desired coverage, etc.)
- develop ORT strategy
- develop ORT procedures, budget, workplan

Training

- plan training
- transmit key ORT information and skills
- use appropriate training methods and materials
- test students' competence
- evaluate training

Logistic Support

- plan logistic support
- procure ORS packets and equipment
- store ORS packets, maintain ORS equipment
- distribute ORS packets and equipment
- maintain inventory records

Supervision

- plan supervision activities
- supervise service delivery (assess ORT task performance, provide feedback, solve problems, motivate workers)

Information Systems

- maintain records on diarrhea service delivery, support activities, size of target population
- conduct special ORT/diarrhea KAP, coverage, and impact studies
- process data, report information, and use for program planning, monitoring, problem solving

Financial Management

- budget and obtain resources budgeted for ORT activities
- generate local resources (e.g. user fees)
- disburse and account for funds used and received for ORT activities

Community Participation

- motivate community leaders and members to participate
- determine desired role of community in ORT activities
- develop community capacity to participate in or undertake ORT activities
- establish schedules and workplans
- monitor activities.

knowledge about how to use ORT from exit interviews were generally representative of the rest of the population in the area.

PRICOR staff and national counterparts processed and analyzed data to identify problems. The results of the systems analysis were generally presented to health officials and managers during workshops, usually in the form of frequency distributions and charts. Also during these workshops, managers identified those problems revealed through systems analysis that required corrective action. In some cases, administrative action was indicated. In others, brief, inexpensive, highly focused operations research studies were undertaken to further understand the problem and/or test alternative solutions.

1.5 NINE SYSTEMS ANALYSES ON ORT

Although the nine ORT Systems Analyses considered in this review followed the same broad methodology, there were variations in its application, depending on the structure of the specific health system being analyzed. These had effects on how data could be collected, and in some situations created difficulties for accumulating data on sufficient cases. In addition, the methodology was modified and improved as more systems analyses were carried out, and later systems analyses were able to obtain information not available in earlier systems analyses. Following are brief descriptions of the nine ORT studies, organized by geographic region.

1.5.1 SYSTEMS ANALYSES IN AFRICA

Three systems analyses were carried out in Africa, all in rural settings: Zaire, Senegal, and Niger.

ZAIRE (1987): The systems analysis in Zaire was carried out as part of an operations research component of the USAID Rural Health Project, operating in nearly half the zones of Zaire. Four health zones were selected for the study. In each zone, the systems analysis team selected five health centers (staffed by nurses and auxiliary nurses): four for their estimated high performance and one for its low performance. In addition to ORT activities at the health center, village health workers are supposed to promote the use of ORS and SSS in their villages. Three different types of ORS packets are available in Zaire, often with more than one type in a health center. These different types require differing amounts of water (700 ml or 1 liter). The diversity of solutions for the various types of packets may well have created confusion among health workers and mothers. The lack of data on the specific type of packet used in the systems analysis data made assessment of correct ORS solutions difficult. The systems analysis team made 38 direct observations of health center diarrhea treatments. They interviewed health center staff (N=48), village health workers (N=56), members of community health committees (N=63), and conducted household surveys to interview mothers with children under five (N=664).

SENEGAL (1989): The systems analysis carried out in Senegal under the auspices of PRICOR and the Ministry of Health focused on supervision of PHC activities. The study included 5 of the 10 regions in Senegal: 2 in which USAID has been supporting PHC programs and 3 as controls. In order to assess supervisory activities, efforts were made to make simultaneous observations of worker performance and supervisor performance. Three levels of supervision were assessed: health post nurses of village health workers (VHW), departmental supervisors of health post nurses, and regional supervisors of departmental supervisors/health post nurses. In some cases, a health care provider would be observed as a health worker treating and also as a supervisor. The village health workers were mostly semi-literate or illiterate. They received a three-month training.

Case management at village level consists of salt-sugar solution, while ORS packets are available at health center level. For treatment of diarrhea, the systems analysis team observed 132 cases: 82 by male village health workers, 21 by traditional birth attendants, and 29 by health post nurses. For 79 of these treatments, supervisors were present and observations were made of supervisors as well. Interviews were also conducted with supervisors (N=73). Due to the difficulty of having spontaneous diarrhea cases come to the VHW or to the health post while the systems analysis team was present, the team would search for cases in the village and then send them to the health worker. Although the health workers were usually aware that these cases were "contrived," they were not told what kind of case was being sent to them (diarrhea or malaria). However, when none could be found, the systems analysis team asked mothers to role-play with the health workers; 32% of diarrhea cases observed were simulations.

NIGER (1989): Working with the Ministry of Health, PRICOR conducted a systems analysis of the Village Health Worker (VHW) Program, which supports a network of over 13,000 workers in 4,000 villages. The systems analysis took place in three provinces of the country, chosen on the basis of their representativeness of the economic and cultural diversity of the country. Village health teams consist of two male workers and two traditional birth attendants, often illiterate. These VHWs receive a 15-day initial training, in which they are taught prevention, treatment with salt-sugar solution (SSS) and health education.⁶ Recently, the MOH has recommended ORS, and this has been incorporated in more recent training. However, given the distribution problems with ORS, they still recommend SSS when ORS is not available. Information on VHW performance for ORT was collected through observation of service delivery and exit interviews of mothers (N=134 diarrhea cases). In circumstances where it was not possible to have spontaneous cases, village health workers were sent out to find cases. When no cases could be found, role-play was used; 12% of the 134 VHW-patient encounters observed were simulation. Observations of supervisory visits (N=51) were also made, as well as interviews with VHWs (N=179), and interviews with supervisors (N=27). Information of mothers' knowledge came from a household survey interviewing 378 mothers with children under five.

1.5.2 SYSTEMS ANALYSES IN ASIA

In Asia, four systems analyses were conducted in three countries: Philippines, Pakistan (two), and Thailand. The three systems analyses focused mainly on rural health services.

PHILIPPINES (1988): The Ministry of Health and PRICOR conducted a systems analysis of ORT performance of public health nurses and rural health midwives in rural health units and health stations. The systems analysis team worked in the Bulacan Province, chosen for its representativeness for quality and human resource levels throughout the country. A total of 105 diarrhea cases were observed being treated in rural health units and health stations. The systems analysis team interviewed 20 public health nurses and 75 rural health midwives about training, knowledge, supervision, information systems, and logistics. Public health nurses were asked about the performance of rural health midwives whom they supervised. This estimation was then compared to actual, observed performance.

⁶ However, the VHW program has been in operation for over 25 years and some VHWs were trained to treat diarrhea with ganidan and charcoal.

PAKISTAN–PUNJAB PROVINCE (1989): The systems analysis in the Punjab Province in Pakistan grew out of the Provincial government's desire to assess utilization of rural health facilities and the effectiveness of multi-purpose primary health care outreach workers. The systems analysis, which was carried out in three districts, included observation of the management of diarrhea cases (N=168) at a sample of Basic Health Units (N=113) and Rural Health Centers (N=55), by medical officers, medical/health technicians, and Lady Health Visitors (LHVs). Exit interviews were conducted with patients as they left the facility (N=93). Household interviews about their knowledge and use of ORT were conducted with villagers (N=1,313) in the catchment areas of the health facilities studied. In addition, multi-purpose health workers were observed conducting outreach visits (N=852) to households in the same communities. Supervisors were observed as they accompanied the multi-purpose health workers on visits to homes in the same communities (N=152), and as they conducted supervisory meetings with those workers (N=36).

THAILAND (1986): In Thailand, PRICOR and the Ministry of Health implemented a systems analysis at the sub-district and village level, assessing the performance of auxiliary nurses, junior sanitarians, and village volunteers. The systems analysis took place in six districts of one province, two districts for each of the following categories: high, medium, and low activity levels. Both health center staff and village volunteers used ORS for diarrhea treatment. The systems analysis team made observations of 49 diarrhea treatments (35 performed by village volunteers and 14 by health staff), of which most were done through role-play because actual cases were not available.⁷ Additional data were collected through a household survey of 630 mothers and interviews with 381 community leaders on their knowledge related to diarrhea and ORT.

PAKISTAN–REGI MODEL BASIC HEALTH UNIT (1989): The first systems analysis in Pakistan was conducted at the model Basic Health Unit (BHU) at Regi village, Northwest Frontier Province (NWFP). The BHU is the lowest level health facility where comprehensive primary care can be obtained. The Regi model BHU was designed to experiment with ways of making the BHU more effective and responsive to the needs of the community. It is representative of other BHUs in physical facilities, equipment, supplies, and staffing pattern. Although no additional resources were authorized, care was taken to ensure that all the authorized resources were made available at the model BHU. Moreover, staff and activities at the BHU received additional interest and attention from Provincial and other health authorities. Accordingly, although all data refer to the operations of one BHU only and should not be taken as typical of other BHUs in the Province, it is reasonable to expect that health worker performance in other, non-model BHUs may be considerably weaker than that at Regi. The systems analysis included observation of patient-health worker encounters (N=27 diarrhea encounters), exit interviews with patients about what health workers had done during the encounter (N=25), household interviews with community members in the Regi catchment area (N=487), and interviews with health workers (N=6) and their supervisors (N=10).

1.5.3 SYSTEMS ANALYSES IN LATIN AMERICA

Two systems analyses were conducted in Latin America, both in peri-urban settings: Peru and Colombia.

PERU (1988): The systems analysis in Peru differed from the other eight systems analyses in that it used simulation instead of direct observation of service delivery and attempted to map such

⁷ The exact percentage of role-play is not available.

things as institutional structure and design in relation to performance. This systems analysis was carried out, in collaboration with the Ministry of Health and PRISM, in a peri-urban area of Lima. The systems analysis team assessed ORT worker performance of auxiliary nurses, nurse supervisors and physicians in 13 health centers. Information on worker performance was collected in 13 direct observations of diarrhea cases and 79 simulations. Additional information was collected through multiple-choice questionnaires filled out by health workers on their technical knowledge (N=161), checklists used to assess the structural and functional characteristics of peripheral health facilities (N=17), self-reporting questionnaires for health workers on characteristics of their jobs, such as standardization, authority, feedback, training (N=157), and interviews with mothers in the community (N=420).

COLOMBIA (1987): PRICOR worked with the non-governmental Fundacion Santa Fe de Bogota to conduct a systems analysis of health volunteers associated with their private health facilities in several peri-urban areas of Bogota. These literate health volunteers were community members who had received 12 days training in health promotion, prevention, and first aid. Training in diarrhea included prevention, danger signs, treatment with ORS, and follow-up. Information on health volunteer performance was collected through systematic observation during home visits (N=137), interviews with (active, semi-active, and inactive) health volunteers (N=97), and self-administered questionnaires for supervisory staff (N=7). Observation of volunteer performance related to diarrhea was limited to the 18 cases detected during the 137 home visits: 3 children with a current diarrhea episode and 15 children with an episode in the last 2 weeks. The small number of current cases limited the information available on clinical assessment and treatment practices of village volunteers. The systems analysis team collected information on the effects of volunteer performance on knowledge of mothers in the community through a household survey of 304 mothers.

Table 1-2 presents a comparative framework for the types of data collection and sample sizes in these eight country studies.

1.6 OVERVIEW OF THE ORT COMPARATIVE REVIEW

This comparative review will focus mainly on service delivery activities (diarrhea case management and health education). Chapter 2 will present the results of observations of health workers from these eight countries, as well as data on mothers' knowledge from exit interviews and household surveys. Chapter 3 focuses on performance of support activities, such as logistics, supervision, and training. These support activities provide the key inputs to service delivery activities, and are important determinants of the quality of health worker performance. Chapter 4 discusses the strengths and weaknesses of ORT service delivery and support service performance that have been identified through the systems analyses. Chapter 4 also discusses what managers did with this information in these countries, and suggests future directions for improving ORT systems' performance.

Table 1-2
PRICOR SYSTEMS ANALYSES
TYPES OF DATA COLLECTION AND SAMPLE SIZES BY COUNTRY

country	Community-Based Workers					Clinic-Based Workers						
	Niger	Punjab	Senegal	Thailand	Zaire	Regi	Punjab	Peru	Philip.	Senegal	Thailand	Zaire
Observation of Health Worker Service Delivery	134*	166	103*	35*	-	27	168	79*	105	29*	14*	38
Observation of Supervision	51	152	51	-	-	-	-	-	61	27	-	5
Household Interviews	378	1313	-	630	664	487	1313	420	-	-	630	664
Exit Interviews	134	-	-	35	-	-	93	-	-	-	14	36
Community Member Interviews	-	-	-	381	63	-	-	-	-	-	381	63
Health Worker Interviews	179	-	124	-	56	7	-	72	95	35	-	48
Supervisor Interview	27	-	35	-	16	10	-	-	24	57	-	5

- data not available

* Some diarrhea treatments were simulation/role-plays: Niger (12%); Senegal (CHW 34%, Nurses 28%); Peru (100%); Thailand (% unknown)

2. RESULTS OF SERVICE QUALITY ASSESSMENT OF ORAL REHYDRATION THERAPY

As described in the previous chapter, the types of workers observed, the sampling strategies, the methods of data collection, and the number of specific variables differed among these nine studies. Nevertheless, even without statistical comparability, it is possible to identify some common areas of strength and weakness in the delivery of ORT services, and to suggest ways in which the quality of some of the components might be improved. This review of the results of PRICOR systems analyses of ORT activities focuses primarily on the service delivery activities (diarrhea case management and counseling) which are discussed in this chapter. However, it also covers essential support activities, including training, supervision, and logistics, which are discussed in the following chapter.

It should be noted that observation data collected on health worker and supervisory performance may produce a picture of optimal worker performance: knowing they are being observed, workers and supervisors are probably performing at their best. Thus, the findings presented in this chapter and in Chapter 3 on supervision may even be an overestimation of routine performance.

2.1 SERVICE DELIVERY

An effective diarrhea case management involves 1) clinical assessment (medical history, physical examination, classification of the child by severity of dehydration), 2) administration and/or prescription of appropriate treatment, and 3) counseling, which includes transmission of key messages and skills to the mother or caretaker for follow-up and home treatment.

Taking an accurate medical history and making a physical examination of the patient alert the health worker to the possible level of dehydration, and are also important for identifying persistent diarrhea and dysentery. Classifying the child correctly by severity of dehydration leads to appropriate case management. According to the WHO Diarrheal Disease Control Program, the administration of appropriate treatment focuses on the proper mixing and administration of ORS or home mix (SSS), and in most cases, rules out the prescription of antibiotics and antidiarrheals. The transmission of key messages and skills to the mother empowers her to manage diarrhea effectively in the home, reinforces the prescribed treatment including the correct preparation and administration of ORS, and provides advice on feeding during and after diarrhea. Teaching mothers to recognize the signs of dehydration alerts them to indications for when they should take their child to clinic. In some programs, mothers are also advised on the means of preventing diarrhea. The three steps of clinical assessment, treatment, and counseling in diarrheal disease management are intrinsically linked, and together determine the quality of the services delivered. A poor history, physical examination, or classification may lead to inappropriate treatment. Incomplete or inaccurate counseling of the mother may result in ineffective home treatment or follow-up for the current episode, and since not all diarrhea cases will be seen by health workers, for future episodes as well.

2.1.1 CLINICAL ASSESSMENT

Table 2-1 presents the results from observations of health workers carrying out clinical assessment tasks in diarrhea cases. A few notes should be made about the interpretation of clinical

Table 2-1

ORT Service Delivery: Observations of Health Workers Carrying Out Clinical Assessment Tasks
(percentage of patient-health worker encounters)

country nb. observations	Community-Based Workers			Clinic-Based Workers						
	Niger*	Senegal*	Thailand*	Regi	Punjab	Peru*	Philip.	Senegal*	Thailand*	Zaire
	134	103	35	27	168	79	105	29	14	38
Asking History Questions										
-- Duration of diarrhea	41	68	-	96	90	76	83	100	-	97
-- Frequency	8	24	37	100	83	90	64	69	37	97
-- Blood/Mucus	6	24	6	93	52	60	26	59	6	66
-- Vomiting	7	22	17	85	43	20	10	59	17	71
-- Fever	11	-	20	70	52	-	23	-	20	76
-- Decrease in urine	0	-	0	7	4	10	2	-	0	11
-- Thirst	0	-	-	19	24	16	1	-	-	40
-- Treatment at home	5	-	-	7	15	22	38	-	-	47
Doing Physical Exam										
-- Assess alertness	-	-	0	-	-	-	-	-	11	-
-- Examine mouth	2	14	9	41	22	76	4	59	36	71
-- Pinch skin	8	27	8	19	20	82	10	83	36	90
-- Examine eyes	2	21	9	-	17	84	-	66	43	82
-- Touch fontanelle	2	6	-	7	8	72	9	45	-	74
-- Feel pulse	0	-	-	-	49	10	-	-	-	-
-- Weigh child	-	1	-	4	-	35	23	41	-	71
-- Take temperature	-	-	3	41	21	25	31	-	50	71
Classifying Dehydration	4	3	3	-	-	90	-	48	43	13

- data not available

* Some diarrhea treatments were simulation/role-plays: Niger (12%); Senegal (CHW 34%, Nurses 28%); Peru (100%); Thailand (% unknown)

assessment data. The data presented in Table 2-1 were all obtained from observation (either real cases or simulation). However, with some components of physical exam and classification, much may be done visually. This makes it difficult for observers to detect whether the activity took place or not. Since service norms in most countries do not require workers to record the results of history and physical exams, or more importantly, their classification of dehydration status, observation of these processes may not be able to capture all worker activities. An observer can only detect the implementation of this classification process if the worker speaks or writes his conclusion.

Another factor to be borne in mind when comparing clinical assessment among the eight countries is the differences in level of worker. Nurses and physicians have been trained to make differential diagnoses and the thoroughness of histories and physical examinations would be expected to be greater than for village-based workers (such as in Niger, Senegal, and Thailand). For this reason, the results have been disaggregated in Table 2-1 into performance of community-based workers and of clinic-based workers. Community-based workers include villagers trained to do simple tasks. Clinic-based workers include nurses, auxiliary nurses, and occasionally physicians.

2.1.1.1 HISTORY-TAKING

History-taking for diarrhea consists of asking a series of questions about the evolution and nature of the diarrhea episode. Looking at the upper panel of Table 2-1, it can be seen that the percentage of health workers asking these questions varied among countries. However, information about frequency and duration generally was elicited, especially by clinic-based workers who, in most countries, asked these 80-90% of the time. Questions that would evoke the need for specific treatment (differential diagnosis), such as blood/mucus in the stools or fever were asked less frequently. These questions were asked rarely by community-based workers. Information related to determining the severity of dehydration, such as increased thirst and decreased urinary output, were hardly ever asked (generally 0-24%). Service providers also infrequently asked whether the mother had given treatment at home to the child. This means that health workers are missing opportunities to reinforce effective home care and to educate mothers about appropriate case management.

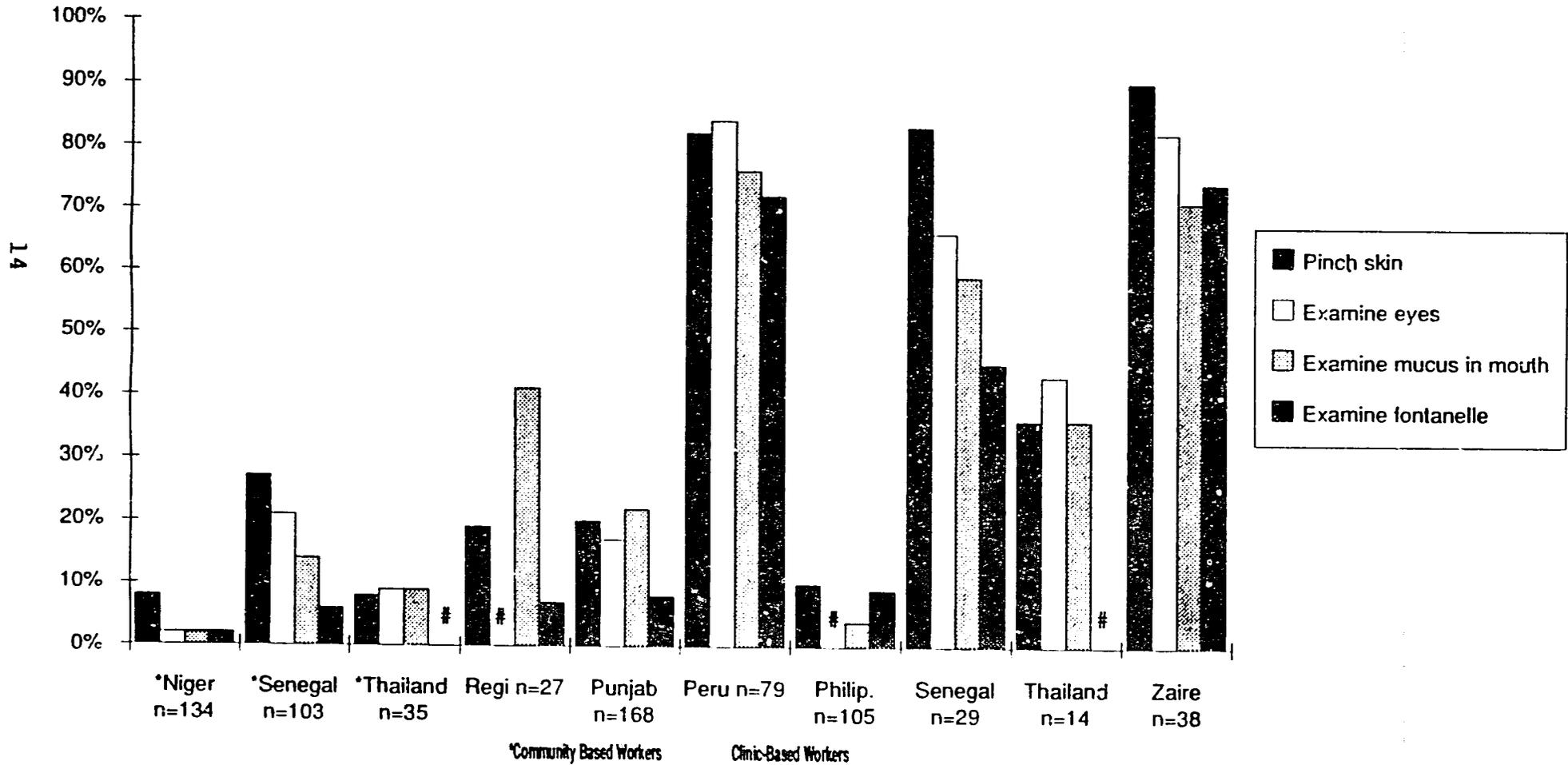
2.1.1.2 PHYSICAL EXAMINATION

In addition to history questions, obtaining information necessary for appropriate case management of diarrhea requires a physical exam. Table 2-1 shows that performance in this area was much weaker than in history-taking in all countries, although the patterns were more irregular across countries. Figure 2-1 shows that in Peru, Senegal, and Zaire, percentages of cases with examination of eyes and skin resilience handled by clinic-based workers were high. Community-based workers performed poorly on all areas of physical exam, as did clinic-based workers in the Philippines, Pakistan (Regi and Punjab), and Thailand.

2.1.1.3 CLASSIFICATION BY SEVERITY OF DEHYDRATION

The systems analysis teams in five countries (Niger, Peru, Senegal, Thailand, and Zaire) tried to observe whether the health worker classified the child according to severity of dehydration. However, they could only document whether health workers had either made a note of the degree of dehydration or had said it aloud to the mother. It is important to recognize that observation has an inherent limitation in detecting those cases in which the worker is mentally making such a classification,

Figure 2-1
Percent of Observed Diarrhea Patients Receiving Physical Examination



= No available data

without writing it down. The data from these five countries (Table 2-1) show that, except in the case of Peru, where data were based solely on simulation, less than half of clinic-based workers and almost no community-based workers made verbal or written classifications.

The limitations of the data collected on classification point out an important problem, both for systems analyses and for supervision. Since classification is one of the key activities in appropriate diarrhea case management, it will be important for supervisors to know if workers are performing this task. However, for observation to be effective in detecting its performance, classification must become a physical process as well: i.e., requiring workers to note dehydration status in the consultant register or on the patient's card.

2.1.2 TREATMENT

Even though clinical assessments in most countries were not complete, health workers observed during treatment showed a strong inclination for prescribing ORT, rather than administering it directly in the clinic.⁸ Table 2-2 shows that ORT (either ORS or SSS) was prescribed in 80-96% of cases seen by clinic-based workers and in 76-100% of cases seen by community-based workers. However, two caveats need to be made: the percentage of cases where ORT was actually administered to the child by the health worker is low, and the percentage of cases where antibiotics and antidiarrheals were prescribed is quite high in some countries. In addition, lack of data on the child's hydration status makes assessment of the appropriateness of treatment impossible.

Only in Zaire and in the model clinic at Regi (Pakistan) do the percentages of cases treated at the time of consultation approach 25%. For all other countries, the percentages are almost negligible (1-10%). This means that health workers are not using the opportunities to educate mothers by demonstrating preparation and administration of ORT. That ORT is rarely prepared and administered at the time of the patient-health worker encounter could reduce mothers' willingness to use it in the home.

The data collected in these systems analyses do not permit us to know whether the specific cases observed would have required treatment additional to ORT, such as antibiotics. However, the rates of antibiotic/antidiarrheal medications prescribed in Pakistan range from 78% to 88%, exceeding what one would expect the percentage of cases requiring these medications to be.

In Niger, although observation revealed only 3% of cases being treated with drugs (along with ORT), household survey interviews with mothers in the same geographic areas produced very different results: only 15% of the mothers reported that the home mix had been recommended while 69% said that the health worker had prescribed charcoal as an antidiarrheal and ganidan as an antibiotic.⁹ This discrepancy illustrates the observer effect on VHW performance: although health workers know they are expected to use ORT, they do not necessarily practice it when not being observed. These differences in behavior could reflect a lack of acceptability on the part of

⁸ Administering ORT involves preparing the solution and giving to the child. Prescribing ORT refers to either recommending that mothers use it, writing a prescription, or distributing ORS packets for home use.

⁹ Many VHWs were originally trained to treat diarrhea with charcoal and ganidan (sulpha-guanidan, a sulpha drug used to treat bowel infections). This recommended therapy was only modified in 1966, and apparently, many VHWs have not changed their habits.

Table 2-2
ORT Service Delivery: Observations of Health Workers Carrying Out Treatment
 (percentage of patient-health worker encounters)

country nb. observations	Community-Based Worker			Clinic-Based Workers						
	Niger 134	Senegal 103	Thailand 35	Regi 27	Punjab 168	Peru 79	Philip. 105	Senegal 29	Thailand 14	Zaire 38
Administer Treatment										
– ORS/SSS*	7	1	-	22	2	-	1	10	-	25
– Antibiotic/diarrhea#	-	12	-	-	8	-	0	14	-	-
Prescribe Treatments+										
– ORS/SSS*	76	78	100	96	81	80	83	93	93	95
ORS*	16	11	100	96	81	80	83	42	93	47
SSS*	60	73	-	-	-	-	-	79	-	66
ORS/SSS alone	-	57	100	22	3	-	-	69	93	20
– Antibiotic/diarrhea#	3	17	-	78	88	-	6	14	-	-

- data not available

+ this refers to both ORS packets distributed or just advised (prescribed) for home use

* alone or in combination with other ORT solution (such as rice water) or other medications

alone or in combination with ORT

the health workers themselves, as well as a strong demand from the mothers for what is perceived to be a more effective treatment. These differences also argue for occasional verification of results from observation, such as in this household survey.

Lastly, Table 2-2 shows that ORS is prescribed widely, except in Africa, where the salt-sugar solution is still being promoted.

2.1.3 COUNSELING OF MOTHERS AND HEALTH EDUCATION

In order for mothers to be able to carry out certain tasks related to diarrhea case management at home, health workers should provide counseling to mothers on the following topics:

1. how to prepare ORS or home mix (SSS).
2. how to administer ORT (frequency and quantity).
3. appropriate feeding practices and extra fluids during and after diarrhea.
4. signs and symptoms of dehydration, indicating the urgent need to take the child to a health care provider.
5. when to return for consultation: if diarrhea persists, signs of dehydration develop, or persistent vomiting becomes evident.

Opportunities for transmitting these messages observed during systems analyses include individual counseling during treatment, group health education, and home visiting.

2.1.3.1 INDIVIDUAL COUNSELING DURING TREATMENT

Table 2-3 shows the percentages of observed diarrhea cases where health workers provided specific counseling messages. With the exception of Zaire and Punjab (Pakistan), 80-93% of clinic-based workers and 74-100% of community-based health workers provided mothers with instructions on how to mix ORT during the encounters observed. Comparing these percentages to the percentage of those who were prescribed ORT, Figures 2-2a and 2-2b show that only in the Punjab (clinic-based workers) and Zaire does the percentage of cases receiving instructions fall considerably below the percentage prescribed ORT. Instructions for preparing ORS are relatively more straightforward than those for SSS. The difficulty community-based health workers experience with these recipes can be seen in Niger and Senegal, where SSS recipes given to mothers were *incorrect* or *incomplete* in about 60% of instances. Even for clinic-based workers in Senegal, 40% of recipes for SSS were incorrect. Community-based workers also appear to have problems with ORS recipes as well.

Counseling on administration of ORT was less frequently provided. Among community-based workers, rates were below 25% (except Thailand). For clinic-based workers, only Peru (simulation) and Thailand showed good results. Figures 2-2a and 2-2b show graphically the drop in the percentage of mothers receiving counseling on preparation of ORT and the percentage receiving counseling on how to administer it. With few cases actually receiving ORT from health workers and with mothers given little counseling on administration, mothers may not be receiving the necessary information to be able to properly rehydrate their children.

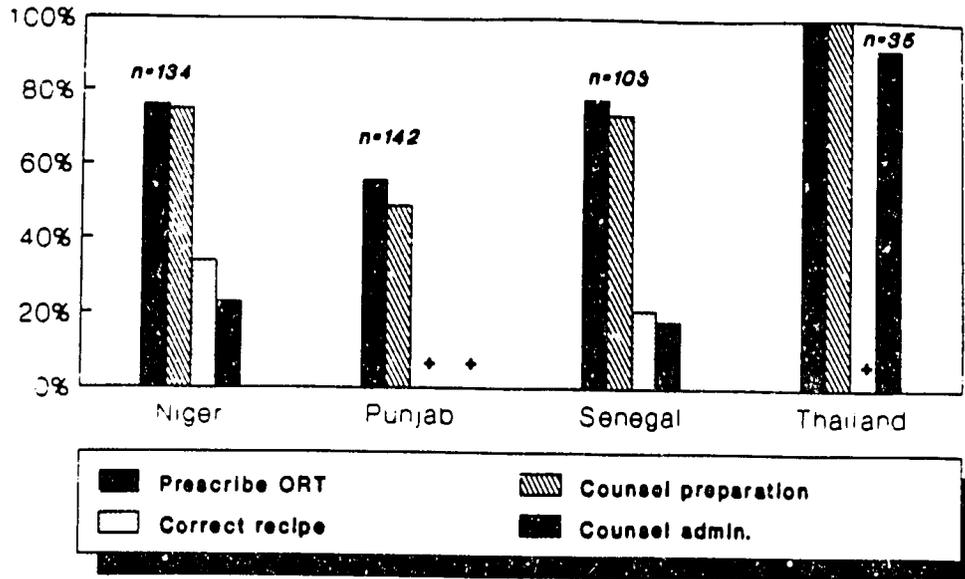
Table 2-3
ORT Service Delivery: Observations of Health Workers Counseling Mothers
 (percentage of patient-health worker encounters)

country nb. observations	Community-Based Workers			Clinic-Based Workers						
	Niger 134	Senegal 103	Thailand 35	Regi 27	Punjab 168	Peru 79	Philip. 105	Senegal 29	Thailand 14	Zaire 38
Counseling Messages										
-- Preparation ORT	75	74	100	93	41	92	80	86	92	32
-- Administration ORT	23	18	92	56	16	88	-	55	75	-
-- How ORT works	14	0	-	-	-	22	-	-	-	-
-- Extra fluid/breast	1	19	-	-	17	76	-	57	-	-
-- Feeding during/after	2	9	60	52	42	55	45	38	43	17
-- Dehydration signs	1	17	-	7	2	19	-	38	-	-
-- Circumstances under which to return	19	17	89	15	29	40	-	72	86	44
Correct Recipe Given										
-- ORS*	53	36	-	-	-	-	-	80	-	-
-- SSS*	40	28	-	-	-	-	-	65	-	91
Counseling Methods										
-- Demonstration	-	-	-	-	7	32	-	-	-	-
-- Have mother repeat	17	14	-	4	2	16	-	45	20	-
-- Invite questions	-	-	-	4	6	-	-	-	-	-

- data not available

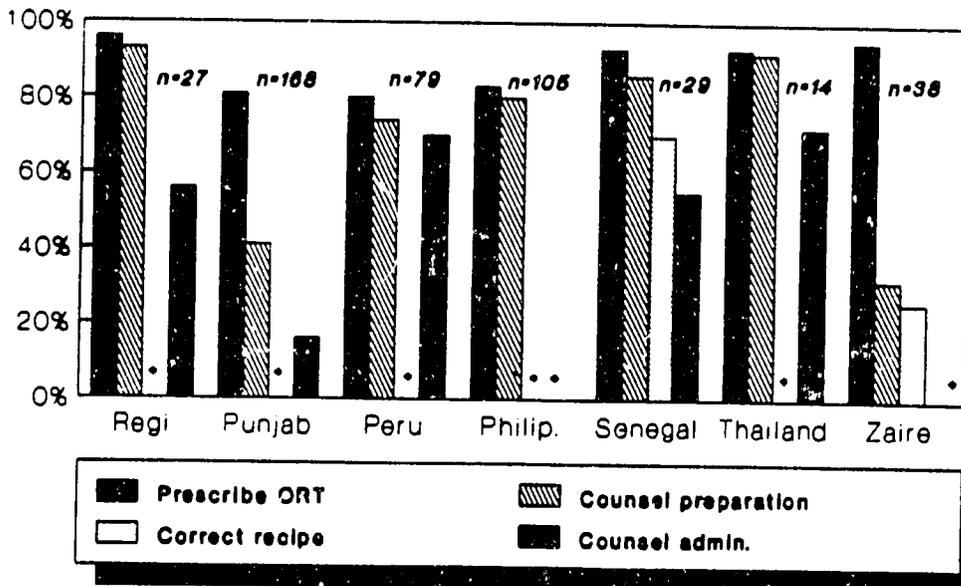
* this is taken as a percentage of cases where instructions were given

Figure 2-2a
 Patient-Community Worker Encounters:
 ORT Prescription and Counseling



♦ No available data

Figure 2-2b
 Patient-Clinic Worker Encounters:
 ORT Prescription and Counseling



♦ No available data

Other messages related to feeding and fluids were given sporadically. Health workers rarely explained to mothers the need for extra fluids and for continuing breast-feeding (except in Peru and Senegal). Health workers counseled mothers on feeding practices more frequently, but then only about 40% of the time. Mothers received little information regarding the signs and symptoms of dehydration, with health workers discussing this topic in only 1-38% of cases. However, health workers did better on telling mothers to return if the diarrhea does not improve, with Senegalese clinic-based workers and Thai community- and clinic-based workers providing this information more than 70% of the time. The other countries did not perform as well (15-44%).

Thus, even though many of the diarrhea case management tasks need to be carried out by mothers, counseling is weak. Mothers are told how to mix ORT, but they are often not told how to administer it. They receive little guidance on feeding or on how to know when they should be bringing their child to a health care provider. In addition, the effectiveness of these messages on mothers' knowledge is not known: mothers were rarely asked to repeat the instructions given to them to make sure they understood what they were supposed to do.

2.1.3.2 GROUP HEALTH EDUCATION SESSIONS

Group health education sessions offer the opportunity to transmit messages related to diarrhea and ORT to larger groups of mothers or other community members. These sessions allow health workers to reach mothers that may not come to them for treatment. Health education sessions covering ORT were observed in Zaire (N=8) and Niger (N=28). Although the data on the process of these group sessions cannot be correlated with mothers' knowledge, they do offer insight into what kinds of messages are being transmitted and what methods are being used.

In Zaire, a total of 25 health education sessions were observed, 8 covering the subject of diarrhea. These eight health education sessions took place mostly at the health centers (67%), with a few given in the community. The number of participants ranged from 40 to 100. Sessions were conducted mainly by health center nurses, although in three cases, health committee members participated. Treatment of diarrhea was discussed in three sessions, ORS preparation in six sessions, and ORS administration in four sessions. Half of these sessions included demonstration and 63% used songs. Health workers used lecture and discussion during three sessions, while stories and role-play were each used only once. Six of the eight observed sessions used more than one method.

In Niger, 28 out of the 163 observed group health education sessions covered the topic of diarrhea. Village health workers presented instructions for preparing ORS in 11 sessions, with 8 including demonstration. They discussed preparation of SSS in 21 sessions, 20 of which included demonstration. However, in seven, the quantity of water was incorrect. Administration of ORT was discussed in 10 sessions. Only one worker discussed the signs and symptoms of dehydration, four discussed feeding after diarrhea, and none discussed feeding during diarrhea.

These observations mirror messages given in clinical settings: most health workers stress preparation of ORT, but fewer stress administration and other key diarrhea case management tasks belonging to the mother. However, a majority of these sessions included demonstration, something often missing during individual patient counseling.

2.1.3.3 COMMUNITY OUTREACH THROUGH HOME VISITING

In Colombia and Pakistan, community-level health workers are expected to make home visits to provide community members with information about diarrhea and ORT and to offer treatment if anyone in the house is ill. The outreach strategy can increase coverage by not relying solely on mothers to bring their children to the health center for diarrhea; at the same time, it offers them education on appropriate home treatment as well.

In Punjab (Pakistan), these workers are called multi-purpose health workers (MPHW). Information from the household survey in the same area (N=1,313) showed that 44% of households had been visited within the last month. During the systems analysis, 852 home visits were observed. The MPHW asked if anyone in the family had diarrhea in 25% of visits. Of those households responding yes (N=143), 56% received ORS from the MPHW, and 82% of those receiving ORS also were instructed in its preparation. However, it is unclear how many cases of diarrhea went undetected because the MPHW did not ask about diarrhea or how many cases were self-declared by the household without the worker having to ask.

In Colombia, the role of the volunteer is to provide education in prevention and management of diarrhea, to supply ORS, to make referrals, and to provide patient follow-up. In the 137 home visits observed, volunteers discovered 18 recent cases of diarrhea at the time of the survey, but observed the child in only 3 cases. In all cases with diarrhea, the volunteer asked about use of ORS. Of the 18 mothers, 22% received instructions for preparation of ORS or home mix, but this percentage was no different from the overall percentage of home visits with advice on preparation of ORT. In only 9% of all home visits did the volunteer provide counseling about administration of ORT, representing 35% of those receiving counseling about preparation. However, none of the mothers of children with diarrhea received counseling about ORT administration. Volunteers did talk about prevention of diarrhea, especially about boiling water, in 53% of home visits. Those items volunteers performed most often are those tasks listed on the family record which they are to fill out during their visits.

2.2 MOTHERS' KNOWLEDGE AND PRACTICE

The previous section has reviewed what health workers do relative to ORT service delivery. In addition to assessing the process, four systems analyses (Niger, Punjab, Thailand and Zaire) collected information from mothers as they left the clinic to see how well they had understood what they were supposed to do at home for their child. Seven systems analyses (Colombia, Niger, Regi, Punjab, Peru, Thailand, and Zaire) collected information on mothers' knowledge and practice through household surveys. These data provided information on how well the general community had understood their role in diarrhea case management, as well as information on utilization of ORT.

Table 2-4 presents the results of mothers' knowledge and practice for both types of data collection.

2.2.1 MOTHERS' KNOWLEDGE DURING EXIT INTERVIEWS

The percentage of mothers interviewed on leaving the clinic who could recite the correct recipe for preparing ORT corresponded closely to the percentage of health workers who provided the correct recipe during counseling. For administration, a higher percentage of mothers knew at least the basics of administration than the percentage of mothers receiving advice from health workers

Table 2-4
Mothers' Knowledge and Use of Oral Rehydration Therapy
 (percent of mothers interviewed)

EXIT INTERVIEWS									
country	Columbia	Niger	Regi	Punjab	Peru	Philip.	Senegal	Thailand	Zaire
nb. observations	-	118	-	93	-	-	-	49	36
-- prescribed ORT		-	-	80	-	-	-	94	-
-- will give ORT		71	-	-	-	-	-	-	95
-- knows correct recipe*									
-- ORS		80	-	72	-	-	-	84	-
-- SSS		30	-	-	-	-	-	-	76
-- knows proper admin		67	-	63	-	-	-	82	76
-- knows correct feeding		-	-	90	-	-	-	-	-
-- knows when return		87	-	95	-	-	-	-	-
HOUSEHOLD SURVEY									
country	Columbia	Niger	Regi	Punjab	Peru	Philip.	Senegal	Thailand	Zaire
nb. observations	304	378	487	1313	420	-	-	630	664
(general knowledge)									
-- knows about ORT	86	62	-	-	-	-	-	88	90
-- knows correct recipe									
-- ORS	97	30	73	67	65	-	-	42	-
-- SSS+	4	8	-	-	15	-	-	-	14
-- knows proper admin	-	-	-	74	60	-	-	-	-
-- knows dehydr. signs	-	-	-	27	80	-	-	-	14
(for recent diarrhea cases)	(N=33)	(N=219)	(N=57)	(N=271)	(N=92)			(N=106)	(N=281)
-- visited health worker	-	44	73	32	80	-	-	-	38
-- gave ORS	48	11	47	-	20	-	-	46	10
-- gave SSS	-	7	-	-	30	-	-	-	31

- data not available

* of those prescribed ORT

+ this includes "safe" variations from the exact recipe

on this point. However, the data do not tell us if this is the mother's first visit to the health worker for a diarrhea case or what other sources of information, such as mass media, are also in effect. These data also do not tell us how long the mothers might be able to retain information such as how to prepare home mix.

2.2.2 MOTHERS' KNOWLEDGE AND PRACTICE FROM HOUSEHOLD SURVEYS

Data collected through household surveys provide some insight into how well mothers will be able to correctly administer ORT in the home. However, the levels of mothers' knowledge about ORT reflect two important aspects of a ORT program: coverage with and effectiveness of counseling. Whether mothers know what to do will depend both on whether anyone has ever told them and on how well the message was delivered. Although it is not possible to separate out these two aspects in the data available, the lower panel of Table 2-4 suggests that ORT programs need to give greater priority to transmitting effective messages to mothers.

Knowledge about preparation of ORT varied widely among countries and among types of ORT (ORS and SSS). Knowledge about correct preparation of SSS was generally about 15% or lower. This probably reflects both the difficulty of remembering the recipe as well as low coverage: knowledge rates of correct ORS preparation in Niger, Peru, and Colombia are much higher. Knowledge of ORS preparation in some countries is relatively high (65% in Peru to 97% in Colombia), although Thailand and Niger both remain in the 30-40% range.

In addition to knowledge about ORT, mothers were asked about how they treated recent diarrhea cases. Here, the percentages of mothers treating with ORT is much lower than the percentage knowing about ORT and generally lower than the percent knowing how to prepare it. Utilization rates for ORT range from 7% to 48%. The low utilization rates for ORS could be due to difficulty in obtaining the packets or to problems with acceptability of the intervention. ORT calls for a very different approach to diarrhea case management than most traditional methods. This difference could create additional barriers for women to apply their knowledge of ORT in the home.

With the exception of Peru and Regi, generally only about 40% of mothers said they took their child to see a health worker. This reinforces the need for mothers to correctly understand how to manage diarrhea cases at home. These self-reported utilization rates probably have an upward bias. In Zaire, for example, based on the assumption of an average of five episodes of diarrhea per year, clinic records yield an estimated rate of only 2.5% of diarrhea cases treated at a health facility while mothers reported 38% utilization. Although differences in definitions of diarrhea could explain some of this discrepancy, it does not explain it all, suggesting that the rates reported by mothers about ORT use in KAP surveys in general may be overestimations.

2.2.3 KNOWLEDGE ABOUT ORT IN THE COMMUNITY

One factor affecting mothers' use of ORT in cases of diarrhea is the social/community context. If mothers find themselves in situations where their tendency to use ORT is not also reinforced by their families and community leaders, they will be less likely to renounce previous practices (that run contrary to the ORT approach to diarrhea case management). Two countries looked at knowledge about diarrhea and ORT in the community: Zaire and Thailand.

In Zaire, 63 community health committee members were interviewed. Of these, 95% knew about SSS. However, only 32% said that diarrhea caused dehydration and 22% recognized sunken eyes as a sign of dehydration. Some 41% of committee members knew that ORT replaces lost liquid.

In Thailand, a survey of 381 community leaders revealed that 100% knew about the signs and symptoms of diarrhea and about where they could obtain ORS packets. While 62% knew how to administer it, only 23% could name the benefits of ORT. These relatively high levels of community knowledge about the existence of ORT may have supported the 47% rate of ORS use among mothers.

2.3 CONCLUSIONS ABOUT SERVICE DELIVERY

Although these systems analysis data do not present a totally comparable picture and have some limitations in capturing health workers' mental assessment process, they do provide important and consistent information about the process of service delivery related to diarrhea and ORT. Among the strengths identified on an international level are the high rates of ORT prescription, and counseling on its preparation. However, health workers appear to be having a somewhat mechanical response to diarrhea cases. Efforts at differential diagnosis or identification of danger signs are rarely made, especially among community-based workers who would need to make distinctions for referral purposes. Apparently accepting the patient's self-diagnosis, health workers do little more than a cursory clinical assessment. Only in a few countries do health workers even generally check skin resilience. Prescription of antibiotics and antidiarrheals is still very frequent in several countries.

Problems also arise in health worker provision of counseling and health education. Since few of the observed cases included treatment at the time of consultation, mothers leave with the responsibility for administering ORT at home. Yet, health workers gave little information on administration, feeding, or signs of dehydration. Oral rehydration therapy is not like other therapies usually prescribed by health workers: it does not work like a drug, it is not administered like a drug. Household surveys of mothers' knowledge indicate that often more than half the mothers who know about ORT are *not* using it when their children have diarrhea. This means that health workers must do more to convince mothers of the value of ORT. This value, however, will only be seen when ORT is correctly used and other feeding habits are modified to encourage sufficient nutrition.

3. ASSESSMENT OF SUPPORT SERVICES RELATED TO ORAL REHYDRATION THERAPY

3.1 INTRODUCTION

This chapter will discuss the support systems relative to ORT activities in order to focus on issues that might explain what was seen in service delivery performance. The types of data available in each systems analysis are somewhat less similar than those for service delivery, due to the differences in technique for data collection and the differences in organizational structure between countries. Observation of support activities was more difficult under "normal, routine circumstances," given the time constraints of the studies. Supervision encounters were only observed systematically in four countries. No systems analysis team was able to observe training activities because of the absence of on-going training programs at the time the systems analyses were carried out. The structure of the support systems also varied widely among these eight countries, presenting more diversity than the clinical settings and service delivery tasks of health workers. Thus, this chapter will necessarily be more descriptive than the previous one.

This chapter will focus on logistics, supervision, and training. This focus reflects an emphasis on those support activities that have the most direct effect of health worker performance. In addition, comparable information about other support systems (financing, planning, community organization, and information systems) was not available across several countries. Logistics, supervision, and training ensure that workers have the necessary resources and skills to carry out their assigned tasks. The following presentation will start with logistics and supervision as routine support activities that should identify and resolve problems as they occur. Training follows as a basic or ad hoc activity to provide workers initially with skills or update them on changes in protocols.

3.2 LOGISTICS AND SUPPLIES

Part of understanding health workers' and mothers' behavior in diarrhea cases management involves knowing whether they had the necessary resources to work with. Although no attempt was made to analyze the full system for producing, distributing, and storing ORS, most of the systems analyses examined availability and reliability of supplies of ORS packets at the peripheral level in order to answer the following two management questions:

Does the service delivery facility have an adequate supply of ORS packets?

Are adequate supplies of ORS available in the community?

At the time of the systems analyses, ORS packets had largely replaced any reliance on home-mix (SSS) in Colombia, Pakistan, Peru, Philippines, and Thailand. Niger, Senegal, and Zaire still continued to rely heavily as well on home-mixed sugar-salt solution (SSS), especially in the more remote areas, although ORS was often prescribed in the clinic settings. In Niger, the Government has recently changed its policy and is trying to replace reliance on SSS with use of ORS, even at the village level.

Logistics data from these eight countries indicated the presence of supply problems in most countries. Availability of ORS packets tended to be most problematic for community-based workers. In Niger only 17% of secouristes and 9% of matrones had ORS packets in their kits on the day they were interviewed, and most had experienced stock shortages. In Senegal, only 14% of health huts had ORS packets in stock. In Thailand, community workers do not normally keep stocks of ORS, and mothers must obtain them from pharmacies in the villages. In Colombia, 52% of volunteers had stocks of ORS (median=5 packets). Most had obtained them from the Fundacion, although others supplied themselves from private pharmacies.

ORS stocks at health service facilities were less problematic in Senegal and Zaire, where more than 80% of centers had ORS in stock. Yet, only 26% of clinics observed in Zaire and in Senegal had both salt and sugar in stock for the preparation and demonstration of the home mix solution. In the Philippines, 82% of nurses interviewed had ORS in stock; nevertheless, 46% of health workers interviewed reported ORS stock-outs during the past 12 months. At the time of the surveys in Pakistan (Regi and Punjab), the Government was experiencing production problems; clinics were drawing down on existing stocks and workers reported trying to restrict their use.

In conclusion, even though the production of ORS packets has increased substantially in recent years, health workers are still experiencing problems in maintaining stocks. This is even more true for peripheral workers. Administration of ORS in the health facilities was observed to occur only rarely; stock problems may explain in part these low ORT administration rates observed during patient visits.

3.3 SUPERVISION

If ORT services are to be effective, supervisors must give serious attention to improving health worker performance in diarrhea case management and in educational outreach. Quality supervisory performance will include such components as: 1) giving explicit priority to identifying and resolving problems in technical as well as administrative performance; 2) observing health workers actually delivering ORT services; 3) making use of supervisory checklists or other job aids to guide service delivery observation and the monitoring of support services; 4) maintaining supervisory schedules and records; 5) providing health workers with timely feedback; 6) problem-solving; 7) taking appropriate follow-up action; and 8) supporting and encouraging health workers.

All countries except Thailand gathered data on supervision. Some systems analyses included direct observations of supervisor-health worker encounters. Others interviewed both supervisors and health workers. All attempted to answer some or all of the following management questions:

Does the first-level supervisor regularly supervise ORT service delivery and support activities?

Does the first-level supervisor regularly have the opportunity to observe ORT activities (facility and outreach)?

Does the first-level supervisor know whether the service delivery facility has problems regarding the quality of ORT service delivery activities?

Does the first-level supervisor take appropriate actions to resolve service delivery facility problems in attaining desired ORT and ORS use rates, quality of care and quality of support activities?

Although there are differences in the supervision systems themselves, and in approaches to documenting supervision activities, a comparative review of supervision provides a general background to understanding potential factors explaining variations in health worker performance among countries.

3.3.1 FREQUENCY AND DURATION OF SUPERVISION ENCOUNTERS

Interviews with health workers revealed that, in general, supervisors are meeting with health workers. In Zaire, Senegal, and Regi (Pakistan), where supervisors are based in a separate location, nearly all health workers had been visited by a supervisor at least once in the last three months. In the Philippines, workers met weekly at the supervisor's base. However, 25% of health workers in Peru working in the same facility as their supervisor said they received little supervision, and 35% said none at all. Moreover, 25% of health workers in Peru were unable to name their immediate supervisor, one indication of the level of direct interaction between supervisor and supervisee.

For community-based workers, supervision was generally less frequent. In Colombia, 66% of volunteers had attended tutorial meetings within the last year with an average attendance of 3 meetings/year (median=2). While 79% of volunteers said they had been accompanied on home visits by a supervisor and 87% had been accompanied for community education talks, the data do not specify when or how often this direct supervision took place. In Senegal, 67% of community health workers interviewed had been visited with the last three months (60% had been visited at least monthly). In Zaire, only 21% of the 57 interviewed village level workers (mama bongisas¹⁰ and sanitarians) said they had been supervised in their village in the last three months. Of those having been supervised (N=12), only two said they had been supervised by a nurse. The other 10 cited supervision by the village health committee. Eight VHWs stated that they met monthly with the nurse at the health center. In Niger, village health workers received visits from their supervisors on an average of only 1.2 times/year.

In Senegal, Regi, and Zaire, information was collected on the duration of supervisory visits. For CHW in Senegal and clinic workers in Regi, the median duration was 30 minutes. In Zaire, three hours was the average duration of supervisory visits. Clinic-based workers in Senegal received supervision visits lasting a median of two hours.

3.3.2 WHAT SUPERVISORS DO DURING SUPERVISION

From interviews with supervisors and workers, some systems analyses were able to obtain a picture of what supervisors do during their supervisory visits (Niger, Senegal, Regi, Peru, and Philippines). Community-based workers in Niger and Senegal stated that supervisors focused mainly on administrative control activities, such as checking drug stocks, records, and finances. In Niger, none of the village health workers interviewed said their supervisors asked them about problems or tested their knowledge; 63% of the supervisors themselves declared they never observed VHW consultations, and 80% said they never observed health education sessions. In Senegal, only 15% of recent supervision visits touched on ORT or health education.

In the Philippines, 60% of workers said they were seldom observed treating diarrhea patients. In Regi, supervision focused on checking drug stocks, records, and attendance. Health workers

¹⁰ Mama bongisas are village women trained to give advice and health education to mothers in the village.

interviewed stated that 68% of health worker-supervisor pairs seldom or never included observation of service delivery.¹¹ In Peru, 65% of health workers stated that they received little or no feedback on their performance. In Senegal, 48% of clinic-based workers interviewed said their supervisors never discussed with them, and 57% said supervisors never demonstrated correct performance.

Thus, even though supervisory-health worker encounters were generally taking place in most countries, supervisors were not focusing on the technical aspects of workers' responsibilities. Several supervisors in training in the Punjab (Pakistan) stated they did not know they should be observing the quality of service delivery. "Supervision," as it is currently being carried out in these countries relative to ORT, is not facilitating identification of problems workers are experiencing in implementing the tasks related to diarrhea case management and health education.

3.3.3 SUPERVISOR'S KNOWLEDGE OF PROBLEMS IN HEALTH WORKER PERFORMANCE.

In the Philippines, Senegal, and Niger, supervisors, aware that systems analyses were taking place, were interviewed about how well they thought health workers were performing. These data, compared to observed health worker performance, provide information on how well supervisors are aware of the quality of health worker performance, a first step in correcting performance deficiencies. These data indicated that supervisors consistently over-estimate the performance of their health workers. Figure 3-1a (Philippines) compares supervisors' impressions of the frequency with which health workers perform certain history-taking tasks with the performance of the rural health midwives observed during the systems analysis. With the exception of asking about the duration of diarrhea, supervisors overestimated performance by 25-71%.

In Senegal, shown in Figures 3-1b and 3-1c, supervisors of clinic-based workers and supervisors of community-based workers generally estimated worker performance to be very high. Even counseling was rated "acceptable"¹² by 78% and 79% of supervisors. For both levels of workers, supervisors over-estimated performance: for clinic-based workers, observed performance was 14-35% percentage points lower, and for community-based workers, 37-59% percentage points lower. The smaller difference for clinic-based workers is in part because of their higher level of performance, leaving less margin for over-estimation.

Figure 3-1d shows supervisors' image of village health worker performance in Niger. Data were only collected on supervisory impressions for preparation of ORS and SSS. However, even these impressions showed gaps of 21-38% between how well supervisors thought village health workers were performing and actual practice.

These four graphs reveal that supervisors do not always have a realistic picture of what health workers are actually doing. The fact that few supervisors actually observe service delivery could

¹¹ The supervision system included many different supervisors for the same worker, depending on the technical field. Out of 7 health workers and 10 supervisors, there were 18 pairs.

¹² "Acceptable" for history-taking and physical exam refers to two or more items being carried out. For counseling of mothers, at least one message transmitted was counted as "acceptable."

Figure 3-1a Philippines
Supervisory Impressions of Frequency of
Task Performance by Health Workers
Compared to Observed Performance

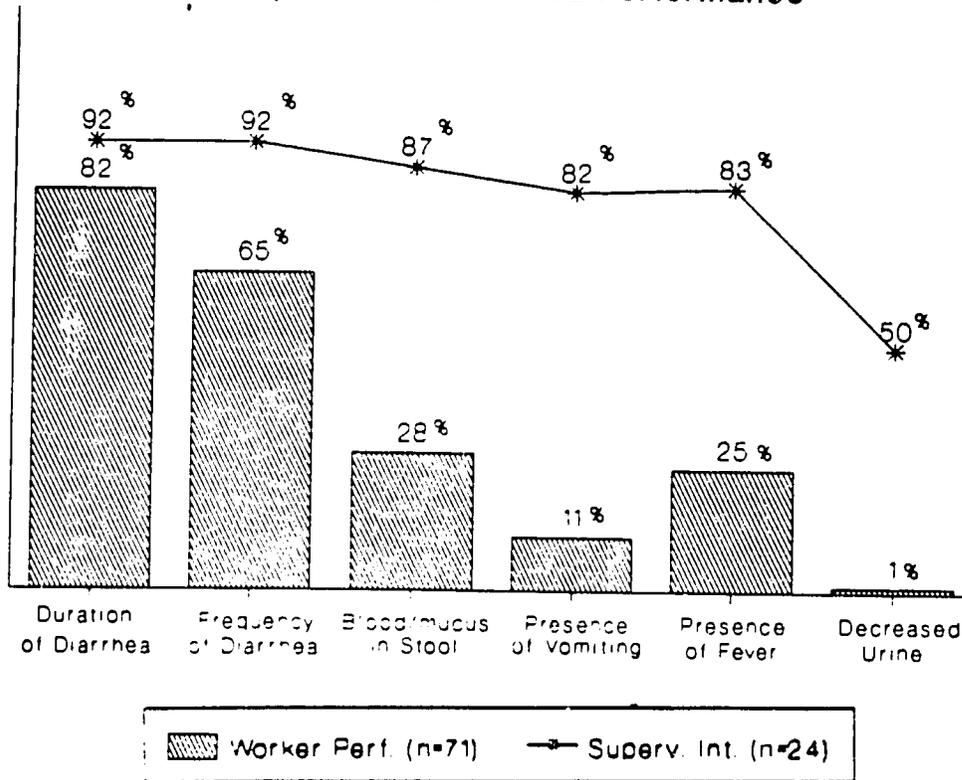
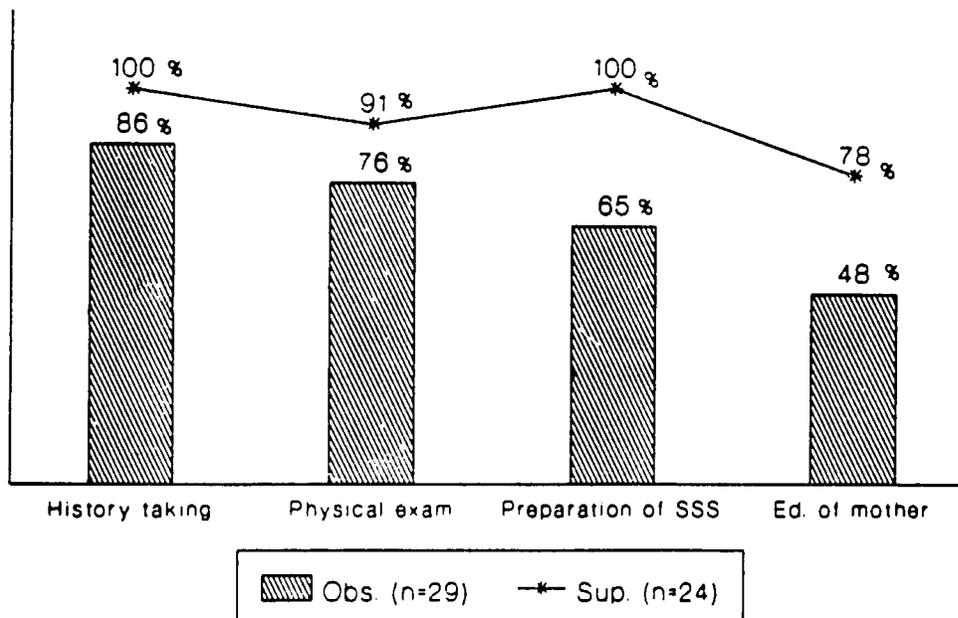
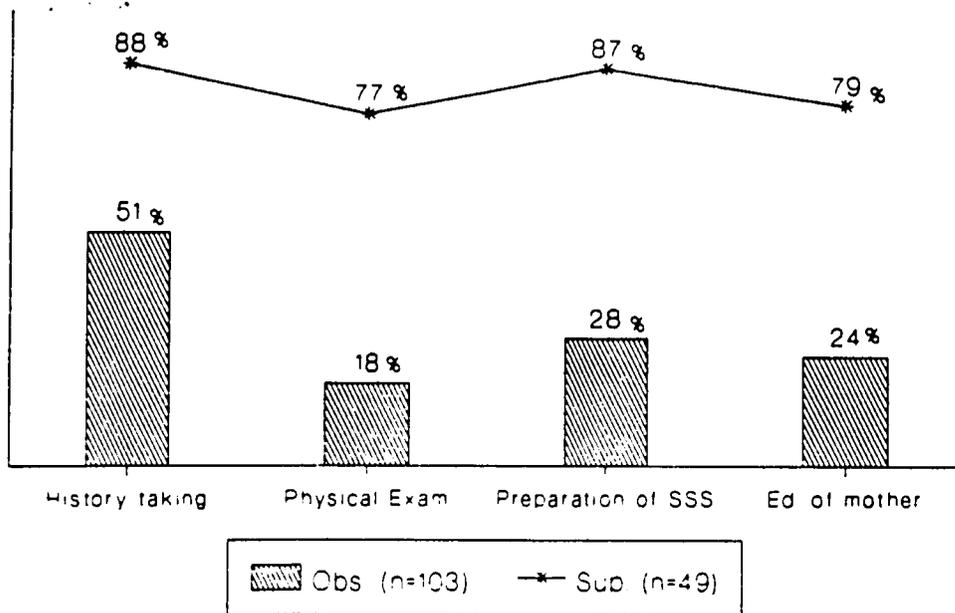


Figure 3-1b Senegal
Supervisory Impressions of Acceptable
Clinic-Based Worker Performance Compared
to Observed Performance



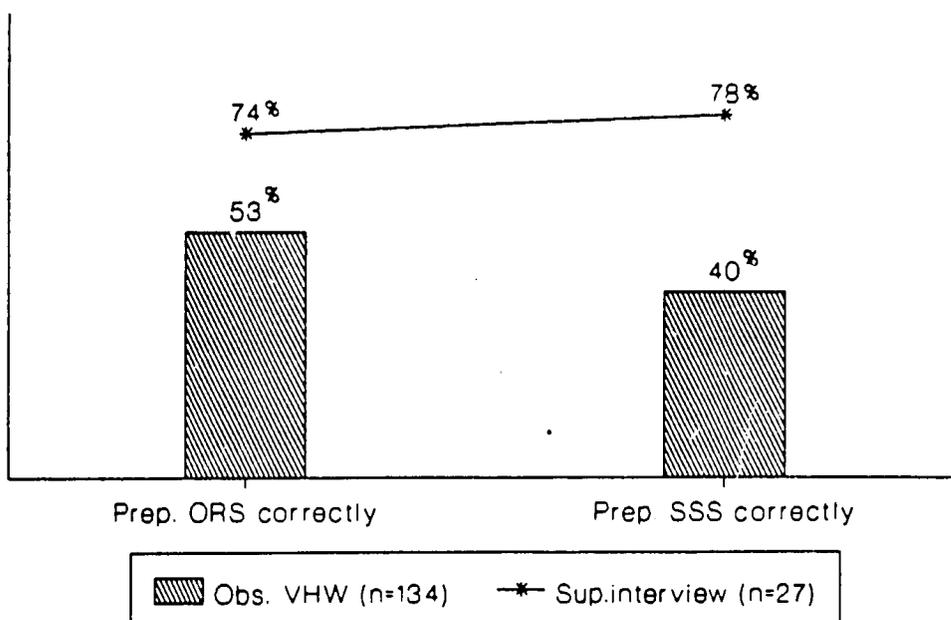
* Percentage of health workers

**Figure 3-1c Senegal
Supervisory Impressions of Acceptable
Community-Based Worker Performance
Compared to Observed Performance**



* Percentage of health workers

**Figure 3-1d Niger
Comparison of Supervisory Impressions of
Acceptable Performance and Observed
Worker Performance**



* Percentage of health workers

explain this overestimation of worker performance. It also implies that health worker performance problems are not being resolved, since supervisors are not aware of them.

3.3.4 OBSERVATION OF SUPERVISORY ENCOUNTERS

Whether or not supervisors discuss performance with health workers is one indication that the supervisors are providing the technical support to workers. Information about supervision of ORT through observation of supervisory encounters was collected on a sufficient number of cases in Niger (N=51), Philippines (N=33), Punjab (N=152), and Senegal (N=78). It should be pointed out that the circumstances under which these observations took place are varied. In Niger, observers went out with supervisors and told them to do what they normally did. Observation of supervision was done separately from service delivery observations of VHWs, and during none of the observed supervisory sessions did a diarrhea case present itself to the VHW. In Senegal, supervisors were accompanied on their regularly scheduled supervision visits and were observed at the same time that observations were being made of health worker performance. Thus, 78 diarrhea cases were observed in the presence of a supervisor. In the Punjab, supervisors accompanied multipurpose health workers on their home visits (N=152) where workers were to detect and treat diarrhea and malaria cases, as well as provide immunizations for those who needed them: in some cases they held a meeting with the worker (N=36). Finally, in the Philippines, supervisors worked in the same buildings as their supervisees. They were observed when diarrhea cases were present in the clinic, but not told to specifically supervise for it.

Table 3-1 presents observation data from these four countries on supervisory-health worker encounters, and focuses on what supervisors discussed or demonstrated with health workers about diarrhea case management and counseling. These discussion points could indicate that supervisors have identified a problem and are trying to take action to correct it. As mentioned above, these data were not collected in truly comparable circumstances. However, they provide information about supervisory problem-identification and problem-solving activities.

In Niger, 51 observations were carried out on supervisory visits made by 27 dispensary nurses. Supervisors discussed aspects of diarrhea treatment activities during only 43% of these visits. When supervisors did discuss diarrhea and ORT, they focused mainly on preparation of ORT, even though many other aspects of worker performance were weak: for example, less than 10% of observed diarrhea treatments had included any history questions or physical exam and less than a quarter involved any counseling beyond mixing of ORT. In only 13% of encounters did supervisors ask health workers to demonstrate their skills in preparing SSS, and only 20% of village health workers initiated any dialogue.

In Pakistan supervisors were observed while they accompanied multipurpose health workers on 152 home visits and while they held 36 individual meetings with supervisees. During these supervisory encounters, little priority was given to ORT. Although 74% of the observed supervisory encounters included some discussion or demonstration by supervisors, only 39% of encounters involved any discussion on diarrhea case management or ORT promotion. Supervisors concentrated more on vaccinations and malaria treatments. Worker emphasis on diarrhea was also low. In only 25% of observed home visits did health workers ask about diarrhea, compared to 35% asking about fever and 55% about children to be vaccinated. Table 3-1 shows that when supervisors did verify, demonstrate, or discuss some aspect of ORT, they focused least on counseling, although it was often discussed in the supervisory meetings.

TABLE 3-1
OBSERVATION OF SUPERVISORY ENCOUNTERS FOR ORT ACTIVITIES
 (% of supervisor-supervisee encounters)

	Niger* N=51	Punjab+ Visit N=152 Meeting N=36	Philippines# N=33	Senegal^ CHW N=51 Clinic N=27		
Discussed/demonstrated:						
- history-taking	-	33%	-	0%	61%	33%
- physical exam	-	-	-	0%	63%	37%
- classification	0%	-	-	-	55%	33%
- treatment/preparation ORT	45%	28%	0%	0%	59%	15%
- counseling	2%	13%	27%	0%	67%	37%
Number of Items discussed with health worker						
- 0 items	57%	61%	-	100%	6%	44%
- 1 item	35%	12%	-	0%	6%	15%
- > 1 item	8%	27%	-	0%	88%	41%

* Niger: collected during supervision visits as normally carried out (in absence of diarrhea cases)

+ Punjab: collected during supervision of home visits by MPHs

Philippines: collected while supervisor was in same building as health worker while health worker was treating diarrhea cases

^ Senegal: collected during regularly scheduled supervision visits (in presence of diarrhea cases) and simultaneously with observation data collection of health worker performance

In the Philippines, of the 33 diarrhea cases treated while the supervisor was present in the health center, for only 24% did the supervisor observe the health worker taking a diarrhea history, and for only 15% did the supervisor observe a physical exam. In no cases did the supervisor discuss performance with the worker. Yet, health worker performance was weak on history and physical exam: for most items, they were carried out in less than 30% of cases observed. Thus, even with the proximity of the supervisor, little feedback is provided to health workers on their performance. Although supervisors met weekly with their supervisees, they do not appear to take advantage of proximity to observe the quality of worker performance and to provide workers with feedback. Thus, opportunities for problem-solving and problem-identification are missed.

In Senegal, supervisors were accompanied on their regularly scheduled visits. During these observed encounters, health post nurses supervising community-based workers discussed more ORT topics more often than did regional and departmental supervisors supervising health post nurses. Health post nurses discussed two or more items in 88% of encounters, compared to 41% for higher level supervisors. The data do not permit distinguishing what percentage of actual problems observed were discussed. However, Tables 2-1 to 2-3 indicate that community-based workers performed history and physical exam items less than half as often as clinic-based workers (health post nurses), provided counseling a third as often, and had more problems with ORS and SSS recipes. Thus, the discussion of more items could reflect the presence of more performance problems in that level of worker. However, even though 69% of the 45 observed SSS recipes were incorrect, only 3 supervisors identified incorrect ORT recipes as a service delivery problem in post-supervisory interviews. In addition, during pre-supervisory encounter interviews, health post nurses had overestimated worker performance by a large margin. This indicates that supervisors do not routinely observe worker performance.

The cross-sectional nature of these data from Senegal, Pakistan, Philippines, and Niger do not permit us to know the impact of supervisory encounters. However, supervisors generally gave less attention to counseling, an area systems analyses identified as weak, and one that is essential to ensure appropriate case management in the home by mothers.

3.3.5 GENERAL CONCLUSIONS ABOUT SUPERVISION

Interviews with health workers and supervisors showed that, although supervisors are meeting with health workers, they rarely observe health workers carrying out diarrhea case management or health education. When asked how well they think health workers are performing certain tasks, supervisors tended to overestimate performance. When supervisors were asked to observe worker performance, it appears that they generally do not discuss or provide much feedback and tend to focus on treatment and preparation of ORT, ignoring health worker performance deficiencies in other areas. Thus, supervision, as currently carried out, is not identifying and addressing quality of care issues in diarrhea case management.

3.4 TRAINING

The previous section on supervision has indicated that supervisors are not really aware of health worker performance problems and are not providing much feedback to their supervisees. Yet, despite the evidence in the previous chapter that there are problems with performance in counseling and clinical assessment, some health workers are correctly performing these tasks. In the absence of much active technical supervision and support, performance of these workers must

be primarily due to training which can furnish health workers with the knowledge and practical skills to carry out their assigned tasks related to case management and health education for diarrhea. Systems analyses attempted to answer the following questions about training:

Have health workers received formal training in ORT?

Are health workers effectively trained in ORT tasks?

Are trainees given the opportunity to practice rehydrating children during training?

Is demonstrated competence in ORT tasks required of trainees before they complete training?

Although no systems analyses were able to observe training sessions, information was collected retrospectively through health worker interviews. A majority of workers in most countries said they had received training in ORT within the last three years.

Niger	Senegal(CHW)	Zaire(CHW)	Regi	Peru	Philippines	Senegal	Zaire
64%	38%	30%	75%	100%	66%	37%	72%

In Peru 45% of 161 respondents stated that they had received training for more than one week, and 38% report receiving some training in ORT at least monthly.

In the Philippines 68% of rural health midwives and 75% of public health nurses stated that they had last received training one or more years ago. Duration of the training was one day or less for 66-75% of the 95 nurses and midwives surveyed. About 90% said that training covered checking for severity of dehydration, treatment with ORT, and counseling of mothers, although "preparation of ORS" was the only topic cited by more than 30% of workers without being prompted. Only 42% said that training addressed the question of when to use antibiotics. Training consisted primarily of lectures and discussions.

In Niger, according to local policy all secouristes and matrones are to receive training in the management of diarrhea as part of their original training course. Most of the village health workers surveyed (100% of the secouristes and 40% of the matrones in the study areas) had indeed been trained for treatment of diarrhea. However, only 64% of secouristes and 40% of matrones had attended a refresher course in 1987 or 1988 when the therapy was changed from ganidan to ORT.

In Senegal, 40% of health post supervisory nurses and 38% of CHWs had received training in ORS within the last three years. Training sessions for health post nurses had an average duration of five days, but often covered more subjects than just ORT. Half of CHW training sessions covering ORT also covered other subjects.

In Zaire, of those receiving training (72%) in the previous three years, over 90% said training covered treatment of diarrhea and preparation of ORS/SSS. Over half said they had been evaluated through observation for preparation of ORT and 23/32 said they were subjected to an oral exam.

In Regi, three out of four health workers interviewed had been trained during the last three years for one or more days. Teachers generally lectured, and only one trainee reported having been asked to demonstrate skills.

In Colombia, 92% of workers interviewed said their training was good, and probing verified that knowledge levels were generally high for signs and symptoms of diarrhea and treatment. Nonetheless, performance during home visits was not satisfactory. Trainers reported testing volunteers through demonstration for ORT preparation, and through questions (oral) for knowledge and prevention of diarrhea and ORT administration.

Thus, most workers had received recent training on treatment of diarrhea. However, lectures were the most common mode of interaction; opportunities for development of "hands on" practice skills as well as the supervised counseling of mothers were rare. Training that focuses primarily on preparation and administration of ORT could explain why little assessment of causes of diarrhea requiring differential treatment is done. The lack of practice, especially for counseling, seems to be reflected in worker performance.

3.5 CONCLUSIONS

Information on logistics, supervision, and training reveal certain weaknesses in these support systems. Although most countries have been able to provide a certain "quantity" (ORS packets, supervision visits, training sessions), the content and methods generally are not addressing the performance problems seen in Chapter 2. Due to the cross-sectional nature of the data collection, these systems analyses do not permit making direct links between worker performance and support activities. However, they do point to areas where efforts could likely produce important improvements in worker performance. That health workers *prescribe* rather than administer ORT could reflect logistical supply problems as well as a lack of emphasis in training and supervision on this. Weak counseling could be the result of training focusing more on treatment, and the use of didactic rather than hands-on techniques.

Supervision does not focus on the technical aspect of diarrhea case management and rarely includes observation of health worker performance. Supervisors' overestimation of performance suggests that, without some regularity of observation, they will be unable to identify problem areas and take action to improve performance. Yet, even when they were observing, supervisors tended to focus on the "treatment" aspect, leaving assessment and counseling aside. Supervisors also need observation skills to help them focus their attention on specific technical aspects.

Current supervision, logistics, and training efforts are reflected in the strengths in worker treatment practices -- ORT prescription in 76-100% of diarrhea cases observed. However, the weaknesses in these support systems relative to clinical assessment and counseling aspects of ORT are also mirrored in the weakness of health worker performance in these areas. Workers are doing what they can in light of the support they receive.

4. CONCLUSIONS: STRENGTHS AND WEAKNESSES IN ORT SERVICE DELIVERY

4.1 CONCLUSIONS

Viewed as a simple, inexpensive, and highly effective technology for reducing childhood diarrhea mortality, oral rehydration therapy (ORT) has been widely promoted as one of the most important of the child survival interventions. Over the last decade, considerable progress has been made in making ORT widely available. PRICOR's nine systems analyses of ORT systems in eight countries have examined the quality of diarrhea case management and health education. These systems analyses have found both strengths and weaknesses in each country studied, and have identified a number of commonalities among the eight countries in system performance.

The strengths found fairly consistently across all programs included:

- Most health centers had ORS in stock.
- In general, supervisors were visiting health workers.
- Most health workers had received training in ORT within the past three years.
- Both community-based and clinic-based health workers were prescribing ORT for most diarrhea cases they encountered, and most explained to mothers how to prepare the solution.
- Mothers knew about the existence of ORS and SSS, and many knew how to prepare ORS.

These strengths reflect efforts made by Ministries of Health and international organizations to institutionalize the use of oral rehydration therapy in diarrhea case management.

However, some important common problems were also revealed in these nine systems analyses:

- Health workers' clinical assessments are generally cursory, especially among community-based workers. As a result, management based on an accurate assessment of hydration status is uncommon.
- Many workers still prescribe antibiotics and antidiarrheals along with ORS.
- Community-based workers are having problems with recipes for home-mix.
- All levels of health workers fail to communicate effectively with mothers and other community members about *administration* of ORT and other aspects of diarrhea case management.
- The content of support system activities (training, supervision, and logistics) are not addressing the above deficiencies.
- Mothers' use of ORT is still low.

Mothers do not enter the ORT system for every diarrhea episode. Before the child receives ORT, the mother must assess the situation and decide to administer ORT or seek out a health worker. Data from household surveys indicated that often more than 50% of childhood diarrhea cases were treated solely in the home.¹³ Other information sources in Zaire, such as record reviews, suggest that even these numbers are overestimations. In addition, most health workers recommend ORT for home use and do not administer it in the clinic. Therefore, regardless of how good health worker case management is, mothers are still responsible for carrying out the majority of case management tasks in the home. If counselling content is weak and methods are poor, as has been seen in these systems analyses, a major impact of diarrhea programs is lost.

Thus, it is crucial that mothers be able to identify the signs and symptoms of diarrhea and dehydration in order to provide appropriate home care and bring the child to a health care provider at the right moment. Yet, when a health care provider was visited by a mother, history taking and physical exams were often poor, especially among community-based workers. Even many clinic-based workers did little probing to identify other types of diarrhea or to assess hydration status, information necessary to provide appropriate case management and referral. In addition, many of these signs and symptoms to be identified during history and physical exam are those that mothers should be able to identify in the home. Health workers *not* performing these preclude mothers from gaining role-models for their own performance.

In the countries studied, workers recommended ORT for diarrhea. Yet, two types of problems persist with diarrhea treatment in several countries: high antibiotic or antidiarrheal prescription rates and incorrect recipes for SSS. The high prescription rate for these drugs probably reflects both patient demand *and* health worker tendencies. Yet, these prescriptions cause unnecessary expenditures for Ministries of Health and patients. Changing behavior of both mothers and health workers requires educational campaigns about appropriate and cost-effective case management. With regard to SSS recipes, other rehydration solutions, such as home-available fluids, may be more appropriate in rural settings, especially where workers and mothers are illiterate and ORS may be difficult to obtain. The "simplicity" of SSS derives from the simple ingredients and the fact that little equipment is needed to prepare and administer it. However, it involves an intricate recipe, and it is more difficult to administer than many "medications," requiring an active commitment of the mothers to work. Given the difficulties of assuring that mothers use the correct recipe for SSS, WHO has led the way in encouraging the use of ORS packets and home-available fluids for diarrhea case management.

Although workers were generally giving mothers instructions on preparation of the ORT solutions they prescribe, fewer were counseling mothers on the quantity to give and frequency for administration. Because ORT is not like other medications which are given in small amounts at specified intervals, mothers need to understand how they should be administering ORT to their children. Also lacking in counseling efforts were messages on other aspects of diarrhea case management that mothers should be performing in the home, such as feeding practices and giving extra fluids. These practices are important, not only for the child's state of dehydration, but also for reducing subsequent malnutrition problems. Clinic-based workers performed better than

¹³ Only Peru and Regi had higher utilization rates. However, it should be remembered that Regi is a model clinic and Peru's clinics were in peri-urban areas.

community-based workers in giving these other educational messages, but performance was still inadequate.

Educational and communication techniques also need improvement. Few health workers demonstrated the preparation or administration of ORT to the mothers, and almost none asked the mother to repeat the instructions or asked if they had any questions. The ORT recipe requires more active counseling methods if it is to be effective. Diarrhea case management by mothers means instilling them with the confidence to carry out certain tasks themselves. With counseling activities as cursory as were seen in the systems analyses, it appears that mothers have not yet been convinced or felt empowered to carry out diarrhea case management activities on their own: mothers' home use of ORT was still low, ranging from 7% to 47%.

In spite of the compelling need for better counseling and education, supervision and training activities in these eight countries did not address quality of care deficiencies in diarrhea case management and health education. ORT training focused mainly on use and preparation of ORT solutions. Less emphasis was placed on how to counsel mothers effectively. Especially because many of the diarrhea case management tasks are to be carried out by the mother, counseling should be a major part of the health worker's ORT tasks. Counseling skills need to be developed and reinforced through on-going training and supervision, as they are not normally part of health workers' basic training. Because supervisors are not aware of deficiencies in health worker performance and tend to focus their efforts on administrative aspects during supervisory visits, problems in quality of care are not being identified and thus not being resolved.

ORT programs have made great progress in promoting ORT as the appropriate treatment for diarrhea. However, ORT's "simple" technology does not mean simple implementation. It is now time to consolidate the advantages that have been gained in the promotion of ORT by stressing better clinical assessment and counseling by health workers. These efforts will make mothers better able to manage diarrhea cases in the homes and bring severe cases to the attention of health care providers. With a high percentage of workers using ORT, the additional efforts to improve clinical assessment and counseling could produce considerable results. These could be achieved by strengthening the support service network so that it places priority on these aspects of worker performance.

4.2 USE OF RESULTS IN THE EIGHT COUNTRY STUDIES

One of the major outcomes of the individual country studies presented in this comparative review has been the use of results by local and national managers. Like first-level supervisors discussed in Chapter 3, many managers in these countries did not know specifically where their systems were weak. Routine monitoring data normally only provided them with information on number of ORS packets distributed and number of diarrhea cases treated. When these results on the process of care were presented to managers in workshops and seminars, managers welcomed the information: knowing *where* the problems were situated assisted them in undertaking targeted corrective action in their own programs. Many countries formulated small operations research studies to develop and test new strategies.

In Niger, for example, specific treatment deficiencies are being addressed through in-service training and the promotion of wider ORS availability in the village. Several small operations research studies are testing different training methods and configurations in order to propose

recommendations for changes in national VHW training protocols. Another study is investigating ORS supply problems at village level.¹⁴

In Colombia, the Philippines, Senegal, and Zaire, efforts are being directed at strengthening ORT supervisory systems through the development of handbooks, supervisory checklists, and training modules. In Zaire and the Philippines, program managers are conducting small studies to develop and test strategies for improving supplies of ORS.

Thailand developed and tested an operational plan for continuing education training in OFT service delivery skills, and for restructuring supervision through decentralization and simplification of planning and management.

In Pakistan, Ministry officials and program managers recommended developing checklists for diarrhea similar to those used in EPI to be used by health workers and supervisors alike. They also recommended developing job descriptions and strengthening ORT in the basic training curricula for health personnel.

Table 4-1 provides a list of some of the small operations research studies that have been implemented as a result of these ORT systems analyses and have guided managers in implementing strategies for program improvement.

4.3 RECOMMENDATIONS FOR FUTURE DIRECTIONS

This comparative review was designed to bring together information on the performance of ORT in a number of diverse countries in order to draw some conclusions about where ORT programs may need to place their efforts in the coming years. Much progress has been made in making ORT available and in changing health workers' approach to diarrhea case management. However, the results from these nine systems analyses expose many quality of care problems. Two major areas of inadequacy are common across all countries studied, indicating that they are probably weak in other countries as well. This commonality argues for new efforts at strengthening these areas:

- effective communication/counseling,
- supervision.

The first is an essential component for assuring quality case management in the home, where most tasks are implemented. Mothers need information to feel confident about the effectiveness of the tasks they are being asked to accomplish and about their skills to be able to carry them out in the home. Much more needs to be learned in how to effectively counsel mothers about ORT: about what messages are the most important, about which messages are the most appropriate, about when and where counseling can most effectively be absorbed and internalized by the mother, about what methods are best used to facilitate communication. Making counseling more effective also means providing health workers with the skills to carry out these tasks and helping them maintain these skills.

¹⁴ The operations research studies in Niger are financed by the Ministry of Health counterpart funds from a USAID Health Sector Development grant.

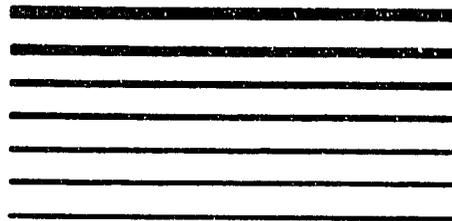
Table 4
Operations Research as Outcome of ORT Systems Analysis

Country	Problem	OR Study	Date/Duration	Cost
Philippines	ORS stocks depleted for 3 weeks or more in 31% of clinics within the last 12 months	Study to improve procurement and distribution of ORS packets	5/11/89	\$10,000
	Public Health nursing supervisors consistently overestimate the performance of the rural health midwife in ORT	Primary health care supervision enhancement	10/89 present	\$46,000
Senegal	Health worker performance in ORT was overestimated by supervisors	Development of a supervision guide for departmental supervisors.	3/90 present	\$5,500
		Development of a training course for departmental supervisors.	3/90 present	\$5,500
	Twenty percent of supervisors do not discuss any aspect of ORT during a supervisory visit.	Assessment of management practices at the departmental level.	3/90 present	\$5,500
Niger	Inadequate management of diarrhea by village health workers	Redesign of training programs for village health workers in diarrheal disease management and education.	4/90 present	\$2,300
	Neglect of technical support in ORT during supervisory visits	Redesign of training programs for supervisors of village health workers in ORT activities	4/90 present	\$5,200
	Few VHWs with ORS stocks in village	Analysis of factors related to good drug lot management in order to assure availability of CRS at village level	4/90 - 6/90	\$5,300
Colombia	Volunteers do not put knowledge of the management of diarrhea into practice	Strengthen the supervision of ORT, including the development of supervisory tools, within the context of the home visit.	8/88 - 10/89	\$13,000
Zaire	Health worker education of the mother in ORT is deficient	Development of messages and health education strategies for education of mothers in ORT (two health zones).	12/88 - 1/90 12/88 - 1/90	\$4,445 \$4,978
	Mothers knowledge and use of ORT is deficient.	Design a simple tool to evaluate the knowledge, attitude, and practice of mothers in the use of ORT.	10/89 - 1/90	\$1,091
		Development of a supervisory strategy to improve primary health care service delivery in ORT (two health zones)	5/89 - 1/90 5/89 - ongoing	\$1,507 \$2,340
		Study to improve the management of acute diarrheal cases in the clinic. (four health zones)	8/88 - ongoing	\$4,600 (each)
	Program effectiveness is dependent on mothers capability to treat diarrhea at home	Development of a strategy to increase home treatment with ORT.	7/89 - ongoing	\$3,293
	Program effectiveness is dependent on mothers utilization of child survival health services including diarrheal case management.	Study of factors related to the utilization of child survival services (four health zones)	8/88 - 11/89	\$2,877 \$3,244 \$3,392 \$2,527
	Pakistan	Management of diarrhea health workers needs improvement; specifically, workers do not adequately assess degree of dehydration and prescribe drugs inappropriately	Development of job aids, as reminders to health workers, for the improved management of diarrheal disease	8/89 - 9/89
Supervisory activities are unstructured and include little observation of ORT service delivery.		Strengthen the supervisory system and develop supervisory checklists for observation of the management of diarrhea.	Proposed	to be determined
Health workers do not have job descriptions		Develop job descriptions for all staff.	Proposed	to be determined
Thailand	Village health volunteer performance in diarrheal case management is deficient	Study alternatives to the village volunteer in Primary health care service delivery including ORT	4/87 - 9/87	\$9,199
	Primary health care record-keeping including ORT is highly centralized and voluminous.	Study of the primary health care information system including ORT	2/88 - 12/88	\$49,352

The results of this comparative review on ORT underscore the potential of supervision. Supervision, is an essential quality assurance activity which involves problem-identification and problem-solving for health worker performance deficiencies. The weak performance in clinical assessment and counseling are not currently being identified by supervisors during their visits. Improving supervisors' ability to identify and resolve performance deficiencies means reorienting the supervision system so that supervisors have the opportunity to observe worker performance (whether real or simulated) and providing them with the tools and skills for observing performance. Problem-solving related to quality of care needs strengthening, especially for community-based workers. Here both the quantity and quality of supervision need improving. New methods need to be tested to determine how often supervision is necessary. These methods should include innovative ways of observing worker performance and improvements in management information systems so that they provide ORT managers with data on quality of care. These systems analyses have demonstrated that, through observation of worker performance, problems can be identified. Supervisors can use these same techniques to solve problems and have a positive impact of service quality.



PRIMARY HEALTH CARE THESAURUS



VOLUME I

Oral
Rehydration
Therapy
Service
ACTIVITIES

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42

ORAL REHYDRATION THERAPY TRAINING ACTIVITIES, TASKS AND SUBTASKS

1. **PLAN ORT TRAINING**
 - 1.1 **ASSESS ORT TRAINING NEEDS**
 - 1.2 **SET OBJECTIVES AND TARGETS FOR ORT TRAINING**
 - 1.3 **SELECT ORT TRAINING MATERIALS AND METHODS**
2. **TRAIN HEALTH WORKERS IN ORT TASKS**
 - 2.1 **TRANSMIT KEY ORT INFORMATION AND REQUIRED SKILLS PER TRAINEES' ORT TASKS**
 - 2.1.1 **TEACH HOW TO ASSESS HYDRATION STATUS**
 - 2.1.2 **TEACH RECOMMENDED DIARRHEA/DEHYDRATION CLASSIFICATION SCHEME**
 - 2.1.3 **TEACH RECOMMENDED DIARRHEA/DEHYDRATION TREATMENT PROTOCOL**
 - 2.1.4 **TEACH HOW TO PREPARE ORS OR OTHER RECOMMENDED SOLUTIONS (PER LOCAL POLICY)**
 - 2.1.5 **TEACH HOW TO ADMINISTER ORS OR OTHER RECOMMENDED SOLUTIONS (PER LOCAL POLICY)**
 - 2.1.6 **TEACH HOW ORT WORKS (I.E., THAT ORT REPLACES WATER AND SALT LOST IN DIARRHEA RATHER THAN STOPPING DIARRHEA)**
 - 2.1.7 **TEACH APPROPRIATE FEEDING PRACTICES DURING AND AFTER DIARRHEA**
 - 2.1.8 **TEACH IMPORTANCE OF TELLING MOTHERS OF DIARRHEA CASES TO GIVE EXTRA FLUIDS DURING DIARRHEA**
 - 2.1.9 **TEACH USE OF COUNSELLING AND HEALTH EDUCATION TECHNIQUES AND MATERIALS**
 - 2.1.10 **TEACH METHODS FOR DETERMINING QUANTITIES OF ORS PACKETS TO ORDER**
 - 2.1.11 **TEACH PROCEDURES FOR MAINTAINING DIARRHEA TREATMENT RECORDS AND REPORTING ORT/DIARRHEA INFORMATION**
 - 2.2 **USE APPROPRIATE TRAINING METHODS**
 - 2.2.1 **DEMONSTRATE REQUIRED ORT SKILLS**
 - 2.2.1.1 **Demonstrate how to prepare ORS or other recommended solutions (per local policy)**
 - 2.2.1.2 **Demonstrate how to rehydrate children**
 - 2.2.1.3 **Demonstrate counselling and health education**
 - 2.2.2 **ASK QUESTIONS OF AND RESPOND TO QUESTIONS FROM TRAINEES**
 - 2.2.3 **USE VISUAL AIDS IN TRANSMITTING KEY INFORMATION**

- 2.2.4 PROVIDE OPPORTUNITIES FOR TRAINEES TO PRACTICE REHYDRATING CHILDREN DURING TRAINING
- 2.2.5 GIVE TRAINEES WRITTEN, INCLUDING PICTORIAL, REFERENCE MATERIALS ON ORT/DIARRHEA
- 2.3 TEST COMPETENCE OF TRAINEES IN ORT TASKS
 - 2.3.1 TEST TRAINEE SKILL IN ASSESSING HYDRATION STATUS BY OBSERVING WHETHER THEY CORRECTLY CLASSIFY CHILDREN BY SEVERITY OF DEHYDRATION (IN CONSULTATION SESSIONS OR IN ROLE-PLAY EXERCISES)
 - 2.3.2 TEST TRAINEE SKILL IN PREPARING ORS OR OTHER RECOMMENDED SOLUTIONS (PER LOCAL POLICY) BY OBSERVING WHETHER THEY CORRECTLY PREPARE ORS OR OTHER RECOMMENDED SOLUTIONS (IN CONSULTATION SESSIONS OR IN ROLE-PLAY EXERCISES)
 - 2.3.3 TEST TRAINEE SKILL IN REHYDRATING CHILDREN BY OBSERVING WHETHER THEY CORRECTLY REHYDRATE CHILDREN (IN CONSULTATION SESSIONS OR IN ROLE-PLAY EXERCISES)
- 3. EVALUATE ORT TRAINING
 - 3.1 TEST COMPETENCE OF TRAINEES IN ORT TASKS (SEE ORT: TRAINING--2.3 TEST COMPETENCE OF TRAINEES IN ORT TASKS)
 - 3.2 ASSESS HEALTH WORKER ORT TASK PERFORMANCE (SEE ORT: SUPERVISION; INFORMATION SYSTEM MONITORING AND EVALUATION)
- 4. MAINTAIN ORT TRAINING RECORDS AND REPORT ORT TRAINING INFORMATION (SEE ORT: INFORMATION SYSTEM, MONITORING AND EVALUATION)

ORAL REHYDRATION THERAPY SUPERVISION ACTIVITIES, TASKS AND SUBTASKS

- 1. PLAN SUPERVISION ACTIVITIES**
 - 1.1 ASSESS SUPERVISION NEEDS**
 - 1.2 SET SUPERVISION OBJECTIVES AND TARGETS**
 - 1.3 IDENTIFY AND TRAIN SUPERVISORS**
 - 1.4 DEVELOP SUPERVISION SCHEDULES AND WORKPLANS**
 - 1.5 PROVIDE LOGISTIC SUPPORT FOR SUPERVISION ACTIVITIES**
 - 1.6 COMMUNICATE SUPERVISION SCHEDULES AND RESPONSIBILITIES**
- 2. SUPERVISE ORT SERVICE DELIVERY AND SUPPORT ACTIVITIES**
 - 2.1 ASSIST HEALTH WORKERS IN ORGANIZING AND PLANNING ORT TASKS**
 - 2.1.1 SET OR COMMUNICATE ORT OBJECTIVES**
 - 2.1.2 DEVELOP ORT WORKPLAN**
 - 2.1.3 DEVELOP OR CLARIFY STANDARDS FOR ORT TASK PERFORMANCE**
 - 2.2 IDENTIFY ORT SERVICE DELIVERY AND SUPPORT PROBLEMS AND STRONG POINTS**
 - 2.2.1 ASSESS ATTAINMENT OF DESIRED ORT AND ORS USE RATES, IF PRESENT, AND/OR FREQUENCY OF ORT SERVICE DELIVERY ACTIVITIES**
 - 2.2.1.1 Assess attainment of desired ORT and ORS use rates by: (1) reviewing service delivery facility records to obtain data on the proportion of diarrhea cases treated with ORT and ORS; or (2) conducting sample household ORT and ORS coverage surveys**
 - 2.2.1.2 Assess occurrence and frequency of outreach ORT education activities by: (1) reviewing service delivery facility records to obtain data on the number of home visits made and/or group ORT education sessions held; (2) interviewing community leaders and members about the frequency of group ORT education sessions; or (3) asking health workers about the occurrence and frequency of outreach ORT education activities**
 - 2.2.2 ASSESS QUALITY OF ORT SERVICE DELIVERY ACTIVITIES**

45

- 2.2.2.1 Assess whether health workers correctly prepare ORS or other recommended solutions by observing health workers prepare ORS or other recommended solutions (in consultation sessions or in role-play exercises)
 - 2.2.2.2 Assess whether health workers correctly assess children's hydration statuses by observing health workers treat diarrhea cases (in consultation sessions or in role-play exercises)
 - 2.2.2.3 Assess whether health workers administer, prescribe or distribute appropriate treatments to diarrhea cases according to children's classifications and local policy by observing health workers treat diarrhea cases (in consultation sessions or in role-play exercises)
 - 2.2.2.4 Assess whether health workers monitor diarrhea cases treated at the service delivery facility by observing health workers treat diarrhea cases (in consultation sessions or in role-play exercises)
 - 2.2.2.5 Assess whether health workers tell all mothers of diarrhea cases how to prepare and administer ORS or other recommended solutions (per local policy) by: (1) observing health workers counsel mothers (in consultation sessions or in role-play exercises); or (2) interviewing mothers of diarrhea cases leaving consultation sessions to determine whether they know how to prepare and administer ORS or other recommended solutions (per local policy)
 - 2.2.2.6 Assess whether health workers tell all mothers of diarrhea cases to administer extra fluids and to follow appropriate feeding practices during and after diarrhea by: (1) observing health workers counsel mothers (in consultation sessions or in role-play exercises); or (2) interviewing mothers of diarrhea cases leaving consultation sessions to determine whether they know to give extra fluids and to follow appropriate feeding practices during and after diarrhea
 - 2.2.2.7 Assess whether health workers tell all mothers of diarrhea cases to bring their children for return consultation if children's conditions worsen or do not improve by: (1) observing health workers counsel mothers (in consultation sessions or in role-play exercises); or (2) interviewing mothers of diarrhea cases leaving consultation sessions to determine whether they know that they should bring their children for return consultation if their children's conditions worsen or do not improve
 - 2.2.2.8 Assess whether health workers effectively provide outreach ORT education by: (1) observing health workers provide outreach ORT education (in group ORT education sessions, in home visits, or in role-play exercises); or (2) interviewing mothers leaving group ORT education sessions and/or after home visits to determine whether they know key ORT messages
- 2.2.3 ASSESS QUALITY OF ORT SUPPORT ACTIVITIES
- 2.2.3.1 Assess whether the service delivery facility has adequate quantities of ORS packets and preparation equipment for ORS or other recommended solutions by: (1) observing quantities of ORS packets and preparation equipment available at the service delivery facility; or (2) asking health workers about shortages of ORS packets and preparation equipment
 - 2.2.3.2 Assess whether health workers properly organize and rotate ORS packets by examining the service delivery facility ORS storage place
 - 2.2.3.3 Assess whether health workers adequately maintain diarrhea treatment records by reviewing diarrhea treatment records for completeness and correctness of information

- 23 ASSIST IN RESOLVING ORT SERVICE DELIVERY AND SUPPORT PROBLEMS IDENTIFIED**
 - 23.1 PROVIDE IMMEDIATE FEEDBACK ON ORT PERFORMANCE**
 - 23.1.1 Praise or otherwise reward good ORT performance**
 - 23.1.2 Advise or instruct health workers how to improve poor ORT performance**
 - 23.1.3 Provide direct assistance in performing ORT tasks**
 - 23.2 TAKE FOLLOW-UP ACTION ON HEALTH WORKER ORT PERFORMANCE**
 - 23.2.1 Provide or arrange for formal in-service training in ORT**
 - 23.2.2 Provide ORT logistic support, if applicable**
 - 23.2.2.1 Provide ORS packets and/or preparation equipment for ORS or other recommended solutions**
 - 23.2.2.2 Provide reference materials on ORT and diarrhea**
 - 23.2.3 Refer persistent ORT performance problems to higher-level supervisors**
 - 23.2.4 Apply sanctions for poor ORT performance, if applicable**
 - 2.4 MOTIVATE HEALTH WORKERS (SEE ORT: SUPERVISION-23 ASSIST IN RESOLVING ORT SERVICE DELIVERY AND SUPPORT PROBLEMS IDENTIFIED)**
- 3. EVALUATE SUPERVISION OF ORT SERVICE DELIVERY AND SUPPORT ACTIVITIES**
 - 3.1 ASSESS FIRST-LEVEL SUPERVISOR SUPERVISION TASK PERFORMANCE**
 - 3.2 ASSESS HEALTH WORKER ORT TASK PERFORMANCE (SEE ORT: SUPERVISION; INFORMATION SYSTEM, MONITORING AND EVALUATION)**
- 4. MAINTAIN SUPERVISION RECORDS AND REPORT SUPERVISION INFORMATION (SEE ORT: INFORMATION SYSTEM, MONITORING AND EVALUATION)**

ORAL REHYDRATION THERAPY SERVICE DELIVERY ACTIVITIES, TASKS AND SUBTASKS

1. IDENTIFY CHILDREN UNDER 5 NEEDING ORT^{*} SERVICES
2. MANAGE DIARRHEA CASES
 - 2.1 PREPARE ORS OR OTHER RECOMMENDED SOLUTION (PER LOCAL POLICY)
 - 2.1.1 MIX ORS PACKET INGREDIENTS WITH CORRECT AMOUNT OF WATER (LOCALLY DETERMINED)
 - 2.1.2 PREPARE OTHER RECOMMENDED SOLUTION USING CORRECT RECIPE (LOCALLY DETERMINED)
 - 2.2 ASSESS HYDRATION STATUS
 - 2.2.1 TAKE MEDICAL HISTORY
 - 2.2.1.1 Ask about duration of diarrhea
 - 2.2.1.2 Ask about frequency of stools
 - 2.2.1.3 Ask about consistency of stools
 - 2.2.1.4 Ask about presence of blood and/or mucus in stools
 - 2.2.1.5 Ask about presence of vomiting
 - 2.2.1.6 Ask about frequency of vomiting
 - 2.2.1.7 Ask about fever
 - 2.2.1.8 Ask about urine output
 - 2.2.1.9 Ask about thirst
 - 2.2.1.10 Ask about treatment administered at home
 - 2.2.1.11 Ask about other illnesses
 - 2.2.2 CONDUCT PHYSICAL EXAMINATION
 - 2.2.2.1 Assess general status (alertness, muscle tone)
 - 2.2.2.2 Examine mucous membranes of mouth
 - 2.2.2.3 Pinch skin
 - 2.2.2.4 Examine if eyes are sunken or if tears are present
 - 2.2.2.5 Touch fontanelle

^{*}The term "ORT" refers to a method for managing diarrhea and/or dehydration by oral administration of ORS or other recommended solutions. The term "ORS" refers to a specific mixture of salts used to prepare solutions for ORT. Most commonly, it is a standard mixture consistent with the WHO formulation; in some countries a modified WHO formulation may be used for the same purpose.

- 2.2.2.6 Feel radial pulse
- 2.2.2.7 Weigh child
- 2.2.2.8 Determine nutritional status/degree of malnutrition using growth card
- 2.2.2.9 Take temperature
- 2.2.3 CLASSIFY CHILD BY DEGREE OF DEHYDRATION (SEE APPENDIX A: "HOW TO ASSESS YOUR PATIENT FOR DEHYDRATION AND OTHER PROBLEMS"(WHO))
- 2.3 ADMINISTER OR PRESCRIBE APPROPRIATE TREATMENT PER CHILDREN'S CLASSIFICATIONS AND PER LOCAL POLICY (SEE APPENDIX B: "TREATMENT PLANS A, B AND C" (WHO))
 - 2.3.1 RECOMMEND HOME ADMINISTRATION OF ORS OR OTHER RECOMMENDED SOLUTION (PER LOCAL POLICY)
 - 2.3.2 ADMINISTER ORS OR OTHER RECOMMENDED SOLUTION (PER LOCAL POLICY) IN APPROPRIATE AMOUNTS
 - 2.3.3 ADMINISTER IV THERAPY OR NASOGASTRIC TUBE THERAPY
- 2.4 MONITOR CHILDREN TREATED AT SERVICE DELIVERY FACILITY
 - 2.4.1 REASSESS CHILD'S HYDRATION STATUS DURING TREATMENT
 - 2.4.2 DISCHARGE REHYDRATED CHILD WITH INSTRUCTIONS FOR CONTINUING HOME TREATMENT (PER LOCAL POLICY)
- 2.5 COUNSEL MOTHER (SEE ORT: SERVICE DELIVERY -- 3.1 PROVIDE INDIVIDUAL COUNSELLING TO MOTHERS OF DIARRHEA CASES)
- 2.6 REFER CHILDREN WHO ARE UNABLE TO DRINK IF NEITHER IV THERAPY NOR NASOGASTRIC TUBE THERAPY IS POSSIBLE
- 2.7 FOLLOW UP SELECTED DIARRHEA CASES TO ASCERTAIN STATUS AND CONFIRM IMPROVEMENT
- 3. MOTIVATE/EDUCATE MOTHERS AND OTHER COMMUNITY MEMBERS REGARDING DIARRHEA AND ORT
 - 3.1 PROVIDE INDIVIDUAL COUNSELLING TO MOTHERS OF DIARRHEA CASES
 - 3.1.1 TRANSMIT KEY MESSAGES AND REQUIRED SKILLS
 - 3.1.1.1 Tell mother to give extra fluids during diarrhea
 - 3.1.1.2 Tell mother how to prepare ORS or other recommended solution (per local policy)
 - 3.1.1.3 Tell mother how to administer ORS or other recommended solution
 - 3.1.1.4 Tell mother how ORT works (i.e. that ORS or other recommended solution replaces water and salt lost in diarrhea rather than stopping diarrhea)
 - 3.1.1.5 Tell mother about appropriate feeding practices during and after diarrhea
 - 3.1.1.5.1 Tell mother to continue breastfeeding

- 3.1.1.5.2 Tell mother to continue feeding
- 3.1.1.5.3 Tell mother to give appropriate foods (locally determined)
- 3.1.1.5.4 Tell mother to give extra foods after diarrhea episode
- 3.1.1.6 Tell mother about the signs and symptoms of dehydration
 - 3.1.1.6.1 Tell mother about lethargy
 - 3.1.1.6.2 Tell mother about absence of tears while crying
 - 3.1.1.6.3 Tell mother about pinched skin retracting slowly
 - 3.1.1.6.4 Tell mother about cessation of urination
 - 3.1.1.6.5 Tell mother about dry mouth
 - 3.1.1.6.6 Tell mother about sunken eyes
 - 3.1.1.6.7 Tell mother about sunken fontanelle
- 3.1.1.7 Tell mother to bring child for return consultation if child's condition worsens or does not improve
- 3.1.2 USE APPROPRIATE COUNSELLING TECHNIQUES
 - 3.1.2.1 Demonstrate preparation and administration of ORS or other recommended solution
 - 3.1.2.2 Ask mother to repeat key messages and/or demonstrate required skills
 - 3.1.2.2.1 Ask mother to repeat the recipe for ORS or other recommended solution (per local policy) and the procedures for administration
 - 3.1.2.2.2 Ask mother to demonstrate the preparation and administration of ORS or other recommended solution (per local policy)
 - 3.1.2.3 Give mother written, including pictorial, instructions for preparing and administering ORS or other recommended solution (per local policy)
 - 3.1.2.4 Ask mother if she has any questions
- 3.2 PROVIDE OUTREACH ORT EDUCATION
 - 3.2.1 TRANSMIT KEY MESSAGES AND REQUIRED SKILLS
 - 3.2.1.1 Explain that additional fluids should be given at the onset of diarrhea and throughout diarrhea episodes
 - 3.2.1.2 Explain recommended treatment for diarrhea in the home (per local policy)
 - 3.2.1.3 Explain how to prepare ORS or other recommended solution (per local policy)
 - 3.2.1.4 Explain how to administer ORS or other recommended solution
 - 3.2.1.5 Explain appropriate feeding practices during and after diarrhea
 - 3.2.1.5.1 Explain that breastfeeding should be continued if children are breastfeeding

- 32.1.52 Explain that feeding should be continued if children are being/have been weaned
- 32.1.53 Explain that appropriate foods (locally determined) should be given if children are being/have been weaned
- 32.1.54 Explain that extra foods should be given after diarrhea episodes if children are being/have been weaned

3.2.1.6 Explain the signs and symptoms of dehydration

- 32.1.6.1 Explain about lethargy
- 32.1.6.2 Explain about absence of tears while crying
- 32.1.6.3 Explain about pinched skin retracting slowly
- 32.1.6.4 Explain about cessation of urination
- 32.1.6.5 Explain about dry mouth
- 32.1.6.6 Explain about sunken eyes
- 32.1.6.7 Explain about sunken fontanelle

3.2.1.7 Explain indications for seeking medical care (locally determined)

3.2.2 USE APPROPRIATE HEALTH EDUCATION TECHNIQUES AND MATERIALS

- 3.2.2.1 Demonstrate preparation of ORS or other recommended solution
- 3.2.2.2 Ask questions of and respond to questions from attendees

ORAL REHYDRATION THERAPY LOGISTIC SUPPORT ACTIVITIES, TASKS AND SUBTASKS

ORS Packets

Preparation Equipment for ORS or Other Recommended Solutions (Spoons, Containers)

1. **PLAN ORT LOGISTIC SUPPORT ACTIVITIES**
 - 1.1 **DEVELOP POLICY ON QUANTITIES OF ORS PACKETS TO BE ORDERED OR ISSUED**
 - 1.2 **DEVELOP PROCEDURES FOR PROCURING ORS PACKETS**
2. **PROCURE ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
 - 2.1 **ESTIMATE REQUIREMENTS FOR ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
 - 2.2 **SECURE AND DISBURSE FUNDS FOR PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS, IF APPLICABLE**
 - 2.3 **ORDER OR BE ISSUED ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
 - 2.4 **COLLECT OR RECEIVE ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
3. **STORE ORS PACKETS AND STORE AND MAINTAIN PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
 - 3.1 **ORGANIZE AND ROTATE STOCK OF ORS PACKETS**
 - 3.2 **STORE ORS PACKETS IN A COOL, DRY PLACE**
 - 3.3 **DISCARD ORS PACKETS THAT HAVE EXPIRED OR HAVE BEEN DAMAGED**
 - 3.4 **CLEAN PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS AFTER USE**
4. **DISTRIBUTE ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
 - 4.1 **RECEIVE ORDERS FOR OR ISSUE ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
 - 4.2 **DELIVER ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS**
5. **MAINTAIN INVENTORY AND EQUIPMENT RECORDS FOR ORS PACKETS AND PREPARATION EQUIPMENT FOR ORS OR OTHER RECOMMENDED SOLUTIONS (SEE ORT: INFORMATION SYSTEM, MONITORING AND EVALUATION)**