

PN-ABD-117

62557

**COMMUNITY HEALTH WORKERS:  
A COMPARATIVE ANALYSIS  
OF PRICOR-FUNDED STUDIES**

Lani Rice Marquez  
Ann Brownlee  
Janet Molzan  
Jack Reynolds  
La Rue Seims

March 1987

Primary Health Care Operations Research Project  
Center for Human Services  
5530 Wisconsin Avenue  
Chevy Chase, Maryland 20815 USA

The work upon which this publication is based was performed  
in whole or in part by the Center for Human Services  
under Cooperative Agreement No. AID/DSPE-5920-00-A-1048-00  
with the U.S. Agency for International Development.

## Acknowledgements

PRICOR acknowledges with respect and appreciation the efforts of the researchers whose study findings and results are presented here. They worked long and hard in difficult settings and contributed significantly to our knowledge of how to design and implement primary health care programs that use community health workers. Researchers whose work is reported here include:

### Bangladesh study:

Shafiq Chowdhury, Johns Hopkins University

### Benin study:

Elizabeth Coit, Unitarian Universalist Service Committee  
Alihonou Eusebe, Université Nationale du Benin

### Bolivia study:

René González, Instituto de Investigaciones Médico-Sociales

### Brazil/JHU study:

Timothy Baker, Johns Hopkins University

### Brazil/UVA study:

Marilyn K. Nations, University of Virginia  
Maria Auxiliadora de Souza, Universidade Federal do Ceara

### Ecuador study:

Jorge Luna, Fundación Eugenio Espejo

### Haiti/AEDC and Haiti/Eye Care studies:

Antoine Augustin, Alliance pour L'Enfance et le Developpement Communautaire

### Haiti/CS study:

Reginald Boulos, Complexe Medico Social de la Cité Soleil

### Haiti/AOPS study:

Michel Cayemittes, Association des Oeuvres Privées de Santé  
William Ward, University of South Carolina

### India study:

Henry Elkins, Management Sciences for Health

### Jamaica study:

Patricia Desai, University of the West Indies  
Bobby Zachariah, Price Waterhouse Associates

### Korea study:

Yeo-Shin Hong, Seoul National University

### Liberia/CHAL study:

Andrew Cole, Christian Health Association of Liberia

### Liberia/CUC study:

Janet Moore, Cuttington University College  
Paul Wall, Tuskegee University

### Malawi study:

Steven Chizimbi, Ministry of Health

### Mexico study:

Ana Ramos, Servicios Coordinados de Salud Pública en el Estado de México  
José Ruano, Servicios Coordinados de Salud Pública en el Estado de México

### Nigeria/CRCN study:

Herman Gray, CRCN Rural Health Project

### Nigeria/Uife study:

Ebenezer Ojofeitimi, University of Ife

### Papua New Guinea study:

Ellen Vor der Bruegge, University of Tennessee

2

**Peru study:**

Manuel Quimper, Ministerio de Salud  
William Spira, International Health Technologies  
Paul Skillicorn, International Health Technologies

**Philippines/UPCN study:**

Leticia Lantican, University of the Philippines  
Thelma Corcega, University of the Philippines

**Philippines/IPH study:**

Carmencita Salvosa Loyola, Institute of Public Health

**Philippines/Visayas study:**

Trinidad Osteria, University of the Philippines  
Ida Siason, University of the Philippines

**Senegal study:**

Clive Gray, Harvard Institute for International Development

**Swaziland study:**

Catherine Connolly, University of Swaziland  
Laurie Dunn, University of Swaziland  
Bertha Dlamini, Ministry of Health

**Tanzania study:**

Fariji Mtango, University of Dar es Salaam

**Thailand/Mahidol study:**

Kraisid Tontisirin, Mahidol University

**Thailand/NESDB study:**

Orathip Tanskul, National Economic and Social Development Board  
Chanet Khumthong, National Economic and Social Development Board

**Uruguay study:**

Obdulia Ebole, Centro Latinoamericano de Economía Humana

This analysis is based largely on study technical reports and the personal knowledge of PRICOR study monitors. Its authors are Lani Rice Marquez, who edited the entire paper and wrote the chapter on Incentives; Ann Brownlee, who wrote the chapters on CHW Tasks and Community Participation; Janet Molzan, who wrote the chapters on CHW Selection and Training; Jack Reynolds, who wrote the chapter on Supervision; and La Rue Seims, who collaborated on the chapter on Incentives. The authors wish to recognize the valuable contributions of Ann Miles, Leslie Traub and Wayne Stinson in the analysis of CHW study findings. The authors apologize for any errors or misinterpretations of the findings of PRICOR-funded studies.

The research upon which this publication is based was performed in whole or in part under the PRICOR (Primary Health Care Operations Research) Project, managed by the Center for Human Services, Chevy Chase, Maryland, under Cooperative Agreement No. AID/DSPE-5920-A-00-1048-00 with the United States Agency for International Development.

## List of Abbreviations Used in the Text

AID	Agency for International Development
CHA	Community health auxiliary
CHP	Community health practitioner
CHW	Community health worker
KAP	Knowledge, attitudes and practices
MCH	Maternal and child health
MCUA	Multiple criteria utility assessment
MOH	Ministry of Health
OR	Operations research
ORT	Oral rehydration therapy
PHC	Primary health care
PRICOR	Primary Health Care Operations Research Project
PVO	Private voluntary organization
RHM	Rural health motivator
TBA	Traditional birth attendant
VHC	Village health committee

**Community Health Workers:  
A Comparative Analysis of FRICOR-Funded Studies**

**Table of Contents**

	Page
I. Introduction	1
II. Specification of CHW Tasks	5
A. Rationale for Operations Research on CHW Tasks	5
B. Operational Issues Related to CHW Tasks	6
1. Who Determines CHW tasks	6
2. Mechanisms for Setting Priorities among CHW Tasks	9
3. Balance of Promotive, Preventive and Curative Tasks	13
4. Mode and Location of Service Delivery	15
C. Conclusions	17
III. Selection of CHWs	19
A. Rationale for Operations Research on CHW Selection	19
B. Operational Issues Related to CHW Selection	19
1. Participants in CHW Selection	20
2. Selection Criteria	22
a. Minimum Capabilities	22
b. Personal Characteristics	23
c. Subjective Attributes	25
C. Conclusions	26
IV. Training of CHWs	29
A. Rationale for Operations Research on CHW Training	29
B. Operational Issues Related to CHW Training	30
1. Training Content	30
2. Training Approach and Methods	32
3. Trainers	33
4. Training Location	34
5. Training Duration and Timing	35
C. Evaluation and Results	36
D. Conclusions	38
V. Supervision of CHWs	41
A. Rationale for Operations Research on CHW Supervision	41
B. Operational Issues Related to CHW Supervision	41
1. Functions of Supervision	42
2. Frequency of Supervision	44
3. Supervision Mechanisms	45
4. Supervisory Agents	46
5. Resources for Supervision	47
6. Training and Preparation of Supervisors	47
C. Evaluation and Results	48
D. Conclusions	48

	Page
<b>VI. CHW Incentives</b>	53
A. Rationale for Operations Research on Incentives	53
B. Operational Issues Related to Incentives	53
1. Types of Incentives to Motivate Specific CHW Behaviors	54
a. Incentives for Recruitment of CHWs	54
b. Incentives to Increase CHW Stability	56
c. Performance Incentives	58
2. Mechanisms for Providing CHW Incentives	60
C. Conclusions	62
<b>VII. Community Participation</b>	65
A. Rationale for Operations Research on Community Participation	66
B. Operational Issues Related to Community Participation	66
1. Methods for Mobilizing Community Support of CHW Programs	66
2. Types of Community Participation in Designing and Implementing CHW Programs	68
a. Community Role in Planning and Organizing CHW Programs	69
b. Community Role in Specifying CHW Tasks	70
c. Community Role in CHW Selection	71
d. Community Role in CHW Training	72
3. Types of Community Participation in Maintaining CHW Programs	74
a. Community Role in CHW Supervision	74
b. Community Role in Provision of CHW Incentives and Support	75
c. Utilization and Acceptance of CHW Services	77
C. Conclusions	79
<b>VIII. Lessons from PRICOR-Funded Studies on the Use of CHWs</b>	83
A. Specific Lessons from PRICOR-Funded Studies	83
B. Primary Health Care Involves a Partnership Between the Community, the Health Worker and the Health System	85
C. The Value of Operations Research for Solving Problems in the Use of CHWs	86
<b>APPENDIX A: Summary of PRICOR-Funded Studies on Community Health Workers</b>	89
<b>APPENDIX B: Abstracts of PRICOR-Funded CHW Studies on Community Health Workers</b>	101

## Chapter I

### INTRODUCTION

Research and action projects over the past decade have pioneered new methods of improving people's health, using simple techniques, mainly local manpower, and a few basic drugs, vaccines and supplies from national or international sources. Relatively low-cost interventions - oral rehydration therapy, immunizations, growth monitoring, and breast-feeding, among others - have been widely promoted as ways to increase chances for children's survival in the first difficult years. There has been encouraging progress in a number of countries, enough to give health planners hope that at least some "health" may be achievable by the year 2000, but major operational difficulties remain.

Since the first international call for primary health care (PHC) sounded at Alma-Ata in 1978, national PHC programs have relied more and more on community-level workers to extend basic health care, particularly preventive and promotive services, to unserved and underserved populations. Great hope was placed on simply trained and relatively uneducated community residents for carrying much of the burden for primary health care, handling multiple interventions and organizing the community for support activities. These front line health agents, commonly known as community health workers (CHWs), were expected to be minimally paid or volunteers and devoted to community service. They were to provide the critical link between the formal, clinic-based health system and the homes and communities in which the majority of primary health care problems arise. They were to be almost miracle workers, starting from little or no education and minimal training, and promoting major changes in the way people raised their children and lived their lives. Reports of China's "barefoot doctors" and other early experiences inspired planners.

Many titles have been used in different countries for the community health worker. These include village health worker, health promotor, health agent, health guide, and health visitor. What is common to these terms in most developing countries is that they refer to workers who are:

- Indigenous to the settlement or the social class of those to be served;
- Trained to function at the peripheral level of health care delivery;
- Based in rural, and in some cases urban, communities;
- Trained to work closely with the communities they serve, so as to involve communities in the process of improving their own health;
- Charged with tasks such as:
  - Education concerning prevailing health problems and the methods of identifying, preventing, and controlling them;

- Promotion of food supply and proper nutrition, an adequate supply of safe water, and basic sanitation;
  - Maternal and child health care, including family planning;
  - Immunization against major infectious diseases;
  - Prevention and control of locally endemic diseases;
  - Appropriate treatment of common diseases and injuries;
  - Promotion of mental health; and
  - Provision of essential drugs; and
- Expected to facilitate access to other health services for more complex illnesses and health problems.

Persons identified and trained as community health workers have ranged from uneducated traditional healers and mothers doing part-time health work, to full-time para-professionals in government service with career expectations and a regular salary. Some work only with their neighbors and have little geographic mobility, others are assigned to unfamiliar communities, possibly in rural areas for the first time. Some - despite their titles - work primarily in clinics, providing essential support services, while others worked almost solely in the community. Many are mainly trained to conduct health education or carry out preventive care, while others diagnose sick patients, sell drugs, and treat simple injuries. All are labelled community health workers, yet their only common feature may be their work at the primary health care periphery.

As programs were implemented in the late 1970s and 1980s, it became apparent that support systems were critical to CHW effectiveness and yet these were often inadequate or absent. Concern was particularly focused on CHW selection, training, and supervision, and on the mobilization of community support. These problems have led community residents and health planners in many countries to lose confidence in CHWs. Nevertheless, the use of front line health workers has been and remains a critical element in strategies to satisfy the basic health care needs of the population in a majority of countries committed to the goal of "Health for All".

Within this context, the Primary Health Care Operations Research (PRICOR) Project initiated its operations research program in 1981, at a time when community health workers were expected to carry out a broad range of primary health care functions, both service delivery and organizational. CHWs were selected for major attention by PRICOR because they were seen as central to the primary health care approach. In many countries, operational systems at the periphery and between the periphery and higher levels were not yet in place. Rather than testing ultimate questions about CHW effectiveness, it seemed most urgent to resolve these operational issues - something for which PRICOR's operational research methodology was particularly suited.

Through a competitive grant procedure, PRICOR selected 49 developing country and international research groups for funding and technical support to help

resolve operational problems in the delivery and support of primary health care services. Of these 49 studies, 30 dealt in some way with the use of community health workers. Of these 30 CHW-related studies, twelve were carried out in the Latin American/Caribbean region, nine in Africa, and nine in Asia. Locations varied from urban neighborhoods of Montevideo (Uruguay) to rural villages in Liberia. All of the studies were completed during the period between 1981 and 1986, a period that saw a gradual shift from the comprehensive PHC approach emphasized at Alma-Ata to the more selective approach recently emphasized by AID, UNICEF, and others.

A chart summarizing all of the CHW studies appears as Appendix A to this report. Full abstracts of the 30 studies are given in Appendix B.

Researchers funded by PRICOR ranged from highly trained university-based analysts to district health officers involved in the day-to-day management of service delivery. Their research backgrounds varied, but most had a strong programmatic orientation and links to decision-makers who could later implement solutions. To orient these investigators to operations research, PRICOR developed manuals, conducted workshops, and provided on-site technical assistance.

Major topics addressed by the CHW studies included specifying the role or tasks of CHWs (20 studies), community organization and participation (19 studies), incentives (17 studies), CHW selection (11 studies), training (11 studies), and supervision (8 studies). Topic selection generally reflected analysis of the PHC system in which the CHWs operated and identification of weak links. These topics reflect the fact that major problem areas for PHC programs include defining what CHWs do and making their activities more effective, obtaining community support for and acceptance of CHWs' activities, motivating health workers, and to a lesser extent, support elements such as training and supervision.

In general, the studies followed the same general operations research approach promoted by PRICOR<sup>1</sup>. This approach consists of in-depth analysis of the operational problem, development of alternative solutions, and selection of the most feasible and appropriate solution. In some cases the solution identified was first validated through a field test, while in others recommendations were presented directly to decision-makers.

The systematic way in which PRICOR-supported investigators resolved problems in these areas varied significantly from that usually followed in PHC programs. In most of the studies, decisions that traditionally were made by high level managers with little or no input from administrators, health workers, or communities, were made by involving all three groups plus researchers. Rather than simply reflecting the past experience and intuitive judgment of program directors and their advisors, decisions in these studies were based on structured analysis and input from participants at various levels. Investigators analyzed relevant PHC systems, developed solutions

---

<sup>1</sup>The application of the operations research approach to solving problems in the use of community health workers is discussed more fully in the PRICOR Monograph, Operations Research Issues: Community Health Workers, by Schaefer and Reynolds.

based both on hard data and on decision-maker preferences, and then validated solutions through at least a brief phase of field testing. Decision-makers have since accepted and implemented many of the resulting recommendations.

This comparative analysis report describes both the results and processes of the PRICOR-funded studies relating to the use of CHWs. Its objectives are to first describe the major CHW-related issues analyzed by the studies and report their findings and experiences. Secondly, the report presents feasible alternatives and approaches developed by these studies. Where appropriate, lessons are drawn which may be applied to PHC programs in other countries. Finally, a third objective of this paper is to illustrate the value of operations research techniques for understanding and overcoming many of the most critical problems facing PHC service delivery programs which rely on community health workers.

While the settings and institutional contexts for these CHW studies varied widely (from church-run programs serving a few rural communities in a single district, to national, government-sponsored programs serving millions), the studies shared an emphasis on identifying "decision variables", i.e., aspects of CHW strategies that could be controlled or modified by PHC program managers and researchers. Because producing generalizable solutions was not a primary objective at the time the studies were designed, the comparative analysis task was to synthesize the experience of these studies with the key decision variables involved in CHW strategies, recognizing the great variability in the programmatic circumstances and locations in which the studies were carried out.

Specific findings are presented for six key components of a CHW strategy: determining CHW tasks, CHW selection, training, supervision, incentives and community participation. Studies which addressed the same problem area, such as CHW training, are compared to understand the range of feasible alternatives (for example, for effective CHW trainers, training methods and locale) and how well these worked under different conditions.

The report is based firstly on written reports of the investigators and secondly on issue-oriented discussions that occurred at an International Conference on Operations Research in Primary Health Care sponsored by PRICOR in June of 1986. PRICOR study monitors and consultants also contributed, such that information and findings are in some cases anecdotal. Within these limitations, it is hoped that the collective experience of PRICOR-funded studies will help other researchers and program managers to better understand and find solutions to operational problems with community health workers.

## Chapter II

### SPECIFICATION OF CHW TASKS

A total of 20 PRICOR-funded studies examined issues related to how to determine or modify the tasks of CHWs. Several of the projects focused directly on the topic while others addressed it only after the problem analysis revealed that consideration of the choice of tasks might improve CHW effectiveness, increase worker satisfaction and stability, enhance the possibilities for community support, or in other ways improve their programs. Most of the studies were concerned with reallocating time, setting priorities, or adding new tasks to the role of existing health workers. Six of the studies examined how tasks would be determined for new CHWs, who were in each case community volunteers.

#### A. Rationale for Operations Research on CHW Tasks

Defining health worker tasks is one of the first steps in developing a CHW program. Decisions made in this area directly influence the types of CHWs that are selected, how they will be trained and supervised, the incentives they can be offered, as well as the logistical support needed for adequate performance. When a new CHW program is being designed or the possibilities for improving an existing program are explored, CHW task specification is often a key decision area to consider.

A number of PRICOR-funded studies examined CHW tasks as a major step before determining the content of new training activities. Three projects which focused on upgrading supervision systems found that they had to consider improvement of CHW task performance as well. Certain studies that addressed the issue of community organization found that workers' roles had to be modified if they were to gain community support and work together effectively with local residents to address priority problems. Other studies that began by identifying particular problems needing resolution, such as a high CHW attrition rate, the underutilization of PHC services, or lack of community acceptance, found that changes in CHW tasks or in how and by whom services were delivered became an important part of the solution.

An examination of the many PRICOR studies that focused in some way on task specification reveals that there were a number of common problems related to this issue that required operations research. For example, in PHC programs in which tasks were determined at the central level, activities designated often did not take into account the variety of local situations in which CHWs worked or communities' needs and priorities. In some cases, this led to a lack of rationality in the way tasks were selected, with little attention to how activities were related to specific health problems or what impact they would have on health status. Several studies found that CHWs were overburdened with a large number of tasks such that they were unlikely to meet targets or perform any of the tasks well. Operations research was needed to identify more appropriate mixes of tasks, set priorities for CHWs and improve the fit between CHWs' activities and community needs and preferences for certain services.

## B. Operational Issues Related to Task Specification

The PRICOR Monograph, Operations Research Issues: Community Health Workers identified a number of operational problems that commonly occur in relation to CHW tasks. These can be categorized as problems related to how the health worker's specific tasks are determined; selection of the mix of services to be provided, including any variations in these based on specific local needs and conditions; and strategies for service delivery, such as emphasis on home visits vs. clinic-based services.

The major issues related to task specification addressed by PRICOR-supported investigators were quite similar to those identified in the original CHW issues paper. These problem areas include:

- a) who determines CHW tasks (health program officials, CHWs, users/community members);
- b) how priorities are set for CHW tasks (mechanisms for identifying health problems and for specifying priority tasks to address them);
- c) balance of promotive, preventive and curative tasks; and
- d) mode and location of service delivery.

Each of these areas will be addressed in turn in the following sections. In each case the discussion will review the study findings about operational problems encountered related to CHW tasks. Examples will be given from relevant studies of how solutions were developed, what alternatives were selected, as well as what results were obtained, if the solutions were tested. Each discussion will end with an analysis of some of the common themes and lessons learned on the particular topic. The final section of this chapter will review and summarize the major conclusions related to role and task specification that can be drawn from these projects.

### 1. WHO DETERMINES CHW TASKS

PRICOR-funded studies found that who participates in determining CHW tasks has important implications for the nature of the activities that CHWs will carry out. A number of general problems were identified that related to who decides what health workers will do. For example, when CHW tasks and time allocation were determined by central level health personnel, decisions often did not take into account the diversity of environments within which CHWs worked or community expectations and concerns. On the other hand, if tasks were selected at the community level it was difficult to maintain the same quality of work throughout the health program or ensure that CHW efforts always focused on activities most likely to have the greatest impact on health status. If a wide range of types of participants were involved in task specification at the central and/or local levels, the process might serve to increase the breadth of input and commitment to the program developed, but decisions became more complex, with greater potential for disagreement.

In 12 of the 20 studies, CHW tasks were determined by the researchers and/or health program officials, who ranged from central level MOH personnel to the staff of small private voluntary organizations which sponsored the CHW program

under study. The remaining eight studies involved a combination of researchers, health officials and community members, in some cases including the persons who would be performing the PHC activities.

The studies in which task selection involved only health professionals (including researchers) did so successfully when the position of the CHW was already well established, as in the case of the Haiti/Eye Care, Jamaica, Liberia/CHAL, Nigeria/CRCN, and Philippines/IPH studies. The research was intended to add specific tasks that had been identified as priority or reallocate time among existing tasks in order to improve the effectiveness of the workers' efforts. Community involvement was not considered necessary, although in some cases the results of household surveys were used to help select the tasks that would be given priority. In the two cases where tasks for new CHWs who were community volunteers were determined with only professional involvement and no community input, the results were mixed. In the Liberia/CUC study, PHC tasks that could be carried out by adolescents were selected by researchers working with teachers, based on their understanding of what health activities older children could feasibly carry out in their own homes. In Korea, however, where researchers tested the use of community leaders as health promoters, the intervention was unsuccessful, in large part because the leaders were not recognized in the capacity of health educator by their communities.

Eight studies involved both health professionals and community members in selecting CHW tasks. In these studies, community participation was an important element in the determination of CHW tasks for several reasons: In five studies, community members themselves were asked to serve as health agents or provide some type of material support for CHWs. In some cases, the researchers or health program officials also sought to raise the degree of community self-determination through participation in deciding on the priority activities for health workers. In the studies in Mexico, Papua New Guinea and Tanzania, researchers sought to make CHW activities more congruent with local needs and priorities as well as more acceptable to community members.

Several of the studies which broadened the group of decisionmakers about CHW tasks developed innovative ways to integrate the priorities of various types and levels of participants in the process. These approaches will be explored more fully in the subsequent section. To illustrate the range of alternatives chosen by PRICOR-funded investigators concerning who would determine CHW tasks, three study examples will be briefly described.

In the Mexico study, investigators found that uniform tasks were programmed at the central level for community health auxiliaries (CHAs), despite considerable geographical and cultural variation among the rural, agrarian, indigenous, industrialized, and marginal urban communities comprising the State of Mexico. Since program authorities were not opposed to exploring how activities of the CHAs could be more closely linked to local needs and priorities, the investigators were able to develop a creative solution which incorporated local level participation. Certain essential tasks chosen by State health officials were still programmed for all CHAs, but the opportunity was provided for supervisor, CHA and community participation in the designation of the remainder of the activities, through the use of microplanning and diagnostic techniques that will be described later in this paper.

In the Swaziland study, community utilization of rural health motivators (RHMs) was low, principally because the workers provided only health education while the community wanted more curative services. To explore ways of modifying the RHMs' role, the researchers gathered suggestions from health professionals, community members, and RHMs themselves, as well as through data gathering visits to other projects. Potential alternatives were developed and evaluated in discussions with the Ministry of Health. As will be discussed in greater detail later, certain task combinations were eliminated because the MOH was opposed to the RHMs providing any curative care. Finally, the alternatives acceptable to the MOH were presented to the communities where a field test was to be held, and community leaders were asked to make the final decision on which alternatives were most appropriate for their areas.

In the Uruguay study, the researchers developed a new outreach program to address the problem of inadequate provision of preventive health services by community health centers (polyclinics) in marginal urban neighborhoods of Montevideo. The investigators considered local self-determination and empowerment as an essential part of development, although the national government at the time did not have this same philosophy. Thus they worked with health center staff to form health committees comprised of individuals identified by the health professionals and representatives of neighborhood organizations. Each neighborhood health committee was asked to identify its own priority problems, in collaboration with volunteer promoters it had chosen, and develop locally suitable action plans for resolving them. The selection of tasks was left entirely to the health committees and promoters to define. The researchers felt strongly that each neighborhood had its unique circumstances and that a more formal and centralized structure would not have worked.

As the examples of Mexico and Swaziland illustrate, researchers were able to meet central or regional level health priorities while still permitting some flexibility at the community level to meet locally determined needs. Expansion of the range of participants at each level seemed useful also, to include various perspectives from within the community and those of CHWs themselves. Broadening participation in task selection offered an opportunity to consider a larger number of perspectives, enhanced the commitment of the various groups to the program, and made it more likely that they would offer needed support at later points in project implementation.

Research groups varied in their orientations toward the issue of self determination and community development as well as the freedom they had to leave questions such as that of task selection up to the local community. The Swaziland research team found itself in a political situation in which it was constrained to develop solutions that were within certain limits set by the central health establishment. Thus while some community input was allowed, the critical decisions concerning the range of acceptable tasks were left to the Ministry of Health. The Mexico study developed a strategy which designated that certain centrally selected tasks would be required for all CHWs, but also encouraged local identification of problems and activities. A key role was retained for the supervisor in working jointly with the CHW on the final programming of tasks. The Uruguay research team, as well as the decision-makers with whom it worked, were strongly in favor of processes that encouraged community development and local self-reliance. This group felt it was critical to design strategies that allowed local communities, in

collaboration with their health workers, to make the final decisions concerning what problems to address and actions to take. This emphasis on local decision-making about tasks to be undertaken and other issues was essential for meeting the project's objectives of community development and self-reliance.

## 2. MECHANISMS FOR SETTING PRIORITIES AMONG CHW TASKS

As PRICOR-funded researchers began to consider what techniques might be used to select priority CHW tasks, they identified several problems related to the way in which CHW activities were normally assigned. These problems included lack of rationality in task selection, overburdening CHWs with too many tasks, lack of guidance given to workers as to what the relative priority should be for the range of tasks assigned, and lack of consideration of what types of persons could best carry out designated PHC tasks. The results of these problems were that CHW tasks were not focused on specific local health problems or on activities that they could most effectively carry out.

Studies formulated strategies both to improve the mix of CHW tasks and to define what tasks new CHWs should carry out. Generally, the mechanisms developed by PRICOR-funded studies for specifying CHW tasks adhered to the following important steps:

- a) identify local health problems;
- b) analyze tasks currently programmed and actually performed by CHWs or examine the skills and traditional roles of potential CHWs; and
- c) select appropriate CHW tasks, based on the information above.

The variety of approaches to defining CHW tasks taken in the PRICOR-funded studies will be illustrated by focusing on the process used in six studies: the Haiti/Eye Care, Tanzania, Mexico, Papua New Guinea, Brazil/UVA, and Liberia/CUC projects.

In the Haiti/Eye Care study, which sought to determine the best way of allocating tasks to CHWs, priority health problems had already been identified by institutions implementing population-based community health programs. The investigators were also already quite familiar with existing health worker tasks and thus did no further work on this topic. To improve the impact of the CHWs' efforts, the researchers concentrated on three priority health interventions (ORT, immunizations and family planning). They attempted to determine the best proportion of personnel time and resources to devote to each of these task areas by first calculating each intervention's "use effectiveness" through a series of studies which examined how effective the activity was in changing mothers' knowledge and practices. The researchers then developed alternative task allocation schemes which took into account the risk status of the mother with regard to infant or child death, the use-effectiveness scores and the time needed to teach the interventions. During the final stage of the project two service delivery schemes were tested. In one, the CHWs were asked to focus on all mothers while in the other they were instructed to teach only mothers with at-risk children. In both schemes, the tasks to be taught were allocated on the basis of the time/use-effectiveness measure. A separate group of CHWs with the existing,

unfocused task allocation was monitored for comparison purposes. The researchers concluded that at-risk targetting and focus on priority interventions was the most operationally feasible strategy for maximizing output variables in service settings with limited resources.

The Tanzania study, which focused on the problem of inadequate supervision of CHWs, took as a given the list of 10 priority PHC tasks developed by the government and did no further analysis of health problems. Before determining what relative priority the various tasks would have in the future, the investigators assessed current CHW performance in the 10 tasks. Due to time constraints, only the frequency of task performance was assessed. The researchers interviewed 58 CHWs concerning how many times they performed certain activities within a 2-week period. The researchers then worked with MOH decisionmakers, using the Delphi technique and nominal group processes to place the 10 PHC goals or tasks in priority order based on both importance (value in preventing illness, death, and disability) and feasibility (technical, economic and public response). The goal-setting exercise also was used to develop supervision strategies that would facilitate achievement of the goals. While community involvement was not sought in determining what the 10 priority CHW tasks would be, the researchers and decision-makers considered community participation in the operationalization of these tasks to be important. Thus, village leaders and residents in 18 communities were asked to set coverage and utilization targets for their CHWs. The researchers discussed the 10 PHC interventions with leaders (the village councils) and other community members, using questionnaires as a basis for discussion. The process of setting coverage targets in each village generated high interest and enthusiasm for the CHWs' activities. Although in some cases the targets set were not realistic, the researchers considered the exercise and the community's involvement in the subsequent monitoring of actual coverage to be an important learning process that succeeded in motivating community support for priority PHC activities.

In the Mexico study, researchers found in their analysis of the actual practices of community health auxiliaries (CHAs) that these community health workers were carrying out less than a third of the 146 tasks programmed for them at the central level and that the tasks they were carrying out were often not of high priority or had little relevance to the particular needs of their community. The investigators sought to reduce the excessive number of tasks programmed for the CHAs by developing a planning mechanism which they called "microplanning", through which local needs could be identified and taken into account in setting priorities among CHW tasks. This process is based on an identification of health conditions through a community census and consultation with community members through public meetings and interviews about their views on significant health problems. In the public meetings nominal group technique was used to identify and rank the main problems threatening the health of the community. These problem lists then served as guidelines for the CHA and her supervisor in programming specific activities to address locally defined problems. Results of the field test of the microplanning process in 10 communities indicated that the approach was feasible for CHAs and supervisors to manage and that it enabled them to plan tasks more rationally and improve responsiveness to community priorities.

The objective of the Papua New Guinea study was to retrain rural Aid Post Orderlies and nurses to do community outreach and increase their preventive

and promotive activities. Priority problems and the knowledge and skills that rural health workers would need to address PHC problems were identified by means of brainstorming and use of the nominal group technique during initial planning sessions, which were attended by Church Health Service and provincial health officials. Skill areas identified included personal and human relations, needs assessment and problem-identification, use of resources, and PHC interventions. As described in more detail in Chapter IV on CHW training, the training consisted of a series of workshops held in selected communities with teachers, health workers, government officials and community leaders as participants, and during which development committees were formed, problems identified, and projects developed to address them. The training emphasized the use of techniques such as "community diagnosis mapping", in which participants drew a map of the village, locating physical health-related aspects, and identified and discussed PHC problems. Another technique used was the "solution development matrix" which focused group attention on identifying community needs or problems, local manpower and resources available to address them, and the technical advice and outside assistance needed. The newly formed development committees generated preliminary lists of community health problems and priorities, determining the resources needed and those available, and the constraints on each activity proposed. Using techniques learned at the workshops, the committee members made decisions about how to best attack their problems in the context of community development. Some of the activities undertaken include construction of water tanks and privies and selection of a woman as a community health worker.

In the Brazil/UVA study, which focused on how to deliver ORT in rural areas through traditional healers, investigators used community KAP surveys, ethnographic analyses, in-depth interviewing and disease surveillance to define diarrheal disease patterns and related health-seeking behavior. Since the project was interested in using traditional healers as outreach workers, the investigators explored the healers' traditional role and activities in treating disease so that tasks selected could be made congruent with prior beliefs and skills. A series of meetings were then held between healers and researchers to develop the strategy for beginning ORT delivery. During the meetings an ORT formula based on a traditional tea was developed and the specific ORT tasks that the healers would carry out were defined. The solution implementation stage of the project has shown that the traditional healers have been quite successful in delivering ORT. The researchers report that the healers prepare the salt and sugar solutions correctly and that they have proved to be reliable and trusted health care providers. Healers have reported that the number of clients they see has increased and that they feel they are performing an important activity for the benefit of the community.

In the Liberia/CUC project, the investigators hoped to identify ways in which adolescents could be trained to do health promotion activities consistent with their existing roles in the community. During a brainstorming session with their advisory committee, the researchers began by identifying health problems that the promotional activities might address. Later a household survey was conducted to gather data on sanitary conditions and recurring health problems, as well as other areas. Through information gathered in the brainstorming session, survey, and interviews with community leaders, the investigators developed an understanding of the traditional child-care roles of adolescents. These results were used to design a set of health promotional tasks which would build on adolescents' traditional roles and address

important health problems. Nominal group technique was then used, with the participation of parents, community and school leaders and curriculum experts, to reduce the tasks to the most important. Teaching modules were prepared for six areas, including ORT and nutrition, skin diseases, poisons and accidents, malaria, oral hygiene and intestinal diseases. During the field test of the program, 13 teachers taught the modules to over a 100 adolescents in four primary schools. Results indicated that most students were beginning to perform their new tasks, and that by building on existing roles and tasks, adolescents could be trained to serve as effective health promoters in their homes and communities.

Comparison of the criteria, participants and methods used for task selection in these six projects reveals three distinct approaches which depended to a large degree on the study objectives and criteria used for task selection.

In the Haiti/Eye Care and Tanzania studies, researchers decided to select tasks based mainly on technical criteria such as which tasks would have the greatest impact on health status while still meeting other practical delivery-related requirements. Little emphasis was placed on problem analysis, mainly because the problems had already been identified. Only the researchers were involved in task selection, using analytical techniques that helped them set priorities among possible tasks based on the technical criteria they had devised. In the implementation of the Tanzania strategy, however, community leaders were involved to orient them about the importance of the PHC tasks and to allow them to set and participate in monitoring the coverage targets for each task.

In the Mexico and Papua New Guinea studies, the investigators felt strongly that when selecting tasks, major emphasis should be given to health worker and community involvement in the process and to the choice of tasks that would address local problems and priorities. Thus for each of the studies problem identification was an important step and the researchers used techniques that involved health worker and community leaders and members in actively analyzing data and identifying their own priority issues. When tasks were selected, the researchers also chose techniques which emphasized group decision-making and the integration of the priorities of various participants.

Finally, in the Brazil/UVA and Liberia/CUC studies, the researchers decided to select tasks that would best fit in with the traditional roles of the individuals they had determined should perform the services. In these studies health problems were also identified using a variety of techniques, but particular emphasis was placed on analyzing the future workers' traditional roles. Then either the workers themselves (the healers in the Brazil study) or groups well acquainted with them (parents, school and community leaders and curriculum experts in Liberia) were involved in task selection.

Results of these six projects and others indicate that each of these three basic approaches to task specification can be quite useful for varying reasons. Techniques that concentrate on analysis of the effects of various tasks on health status may be helpful in eventually bringing down morbidity and mortality rates. Techniques that emphasize community involvement in task selection may also be quite successful in improving health status if greater community involvement and acceptance of the program leads to wider service utilization and population coverage. These techniques are particularly

helpful if community participation and acceptance is a problem, as was the case in a number of PRICOR-funded studies. Finally, selecting tasks based on an analysis of how appropriate PHC activities can be incorporated into traditional roles proved to be an innovative and successful approach for extending primary health care services.

### 3. BALANCE OF PROMOTIVE, PREVENTIVE AND CURATIVE TASKS

The issue of what proportion of a CHW's time should be allocated to promotive, preventive and curative activities, and how desired changes in emphasis could be achieved, were of importance in CHW studies in Nigeria, Swaziland, Papua New Guinea, Uruguay, Korea and the Philippines. Investigators identified a number of operational problems when exploring these issues. They found, for example, that the community often did not understand the value of promotional and preventive services and therefore did not support the work of the CHW in this area. Curative services were usually in greater demand. CHWs themselves often did not spend as much time on promotive and preventive activities as program planners desired. Reasons they gave included that much of their time was taken up with curative tasks because of the higher demand for treatment and that they received little community recognition or support for the preventive and promotive work. Promotive and preventive work often required home visiting and other outreach activities which were more time-consuming than clinic care. Lack of transportation and supervisory support, as well as conflicts with other responsibilities, were often cited as factors that discouraged preventive activities.

Several PRICOR study groups, faced with a strong demand on the community's part for curative services, placed an emphasis on exploring ways to upgrade CHWs' skills in this area.

In the Nigeria/CRCN study, the researchers set out to determine the key reasons for high attrition rates among CHWs and to identify and test solutions. One important issue that emerged during the problem analysis phase was that the community wanted CHWs to provide more curative care. CHWs themselves often wanted to provide a wider range of services and were not effective as health educators because their limited curative abilities adversely affected their credibility. The researchers determined that it would be difficult to upgrade the CHWs' curative skills, due to their low level of education and training. In order to address the community's demand for curative care, the investigators, who were also the program managers, decided in the future to emphasize recruitment and training of higher level community health aides who would be placed in the larger villages and provide more curative services, as well as undertake preventive and educational activities.

In Swaziland, the investigators' initial objective was to determine the most appropriate way of sustaining Rural Health Motivators (RHMs) through community financing. They found the community was not willing to support the preventive services of the RHMs because they really wanted them to play a more curative role. When the researchers explored the possibility of upgrading curative skills they found, however, that the health establishment was not willing to delegate these responsibilities to RHMs. In order to identify a viable solution, the researchers used data from a number of sources as input into interaction matrices which helped determine which RHM skills should be

strengthened. Eventually the PHC skills of immunization, ORT, and growth monitoring, which were known to be important to child survival and of interest therefore to community leaders, were chosen for emphasis. The child survival skills of eight RHMs working in a single chieftancy were upgraded through additional training. An evaluation survey conducted six months after the training revealed that RHMs had increased their activity in ORT, immunization referrals and growth monitoring. Six of the eight RHMs reported more people were coming to them for assistance with problems concerning child health.

Several other PRICOR-funded studies were concerned with designing or modifying CHW activities so as to more clearly stress preventive and promotive tasks. They explored a range of solutions that met with varying success. The Papua New Guinea study focused on retraining nurses and Aid Post Orderlies to place greater emphasis on disease prevention, health promotion and community development to complement their curative services. Health workers and community leaders formed development committees and used simple problem identification and planning techniques to select and undertake a variety of development projects. Promotive and preventive tasks and continued use of the development process that the project initiated were incorporated into the rural health workers' job description.

In the Uruguay study, the investigators were concerned with the fact that polyclinics in marginal urban neighborhoods were mainly curative, providing little preventive services or community outreach. Their strategy, similar to that used in the Papua New Guinea project, involved organization of neighborhood health committees and recruitment of volunteer health promoters to identify health-related problems of concern to community members and to plan and implement solutions. In two of the three experimental neighborhoods, the community organization efforts resulted in more community activity in the areas of health promotion and prevention. Another unexpected result was that the utilization of the neighborhood polyclinics in the experimental area increased.

Investigators in the Korea study were also faced with a primary health care system which emphasized clinic-based medical services. Studies had determined that the population mainly valued curative care. Fees for service were collected only for curative care, and transport to isolated villages for outreach activities was difficult. The research project developed was designed to determine whether support from village organizations would enhance health worker effectiveness and productivity in preventive tasks. The researchers selected PHC tasks to be emphasized based on results of an initial survey. Community Health Practitioners (CHPs) were then trained in community outreach and preventive and promotive care. They educated community health leaders who were then supposed to perform various communication and health education tasks. A process evaluation found that the leaders' new role was not well recognized by the community and that they were not often consulted. Nor were these voluntary workers particularly motivated in carrying out their new tasks. The CHPs' activities also remained mainly curatively oriented although some improvement in outreach activities resulted after a second series of workshops was held to booster enthusiasm.

In the Philippines/UPCN study researchers determined that it was difficult for CHWs to spend enough time on preventive household visits due to family responsibilities, income-generating activities and periods of intense

agricultural work. The strategy which the investigators selected for improving CHW training included adoption of a Ministry of Health course syllabus which focused on preventive activities related to maternal and child health, diarrheal diseases and tuberculosis. After institution of the new training program, however, CHWs reported that while they recognized the value of preventive services over curative ones, it was still the latter that they emphasized to the greatest degree, stating as the reason lack of time for preventive and promotive work.

These examples show some important trends. One pattern that can be seen is an interesting relationship between the type of approach used by projects that wished to increase health worker activity in the promotive and preventive areas and the results they obtained. Project evaluations seem to indicate that programs that used community development approaches, involving the communities in problem identification and solution development (such as in the Papua New Guinea and Uruguay projects) were most successful. Programs that relied to a greater extent on training or health education to convince the health workers and community of the value of preventive and promotive services (such as in the Korea and Philippines/UPCN studies) showed less positive results in this area. It seemed that the community needed to be actively involved for the change to a more PHC-oriented approach to be successful.

During the problem analysis stage certain projects (such as the Korea and Philippines/UPCN studies) identified a number of constraints that would make preventive and promotive work difficult. Problems, for example, included the fact that CHWs were remunerated only for curative care, lack of transportation to isolated villages for outreach work, limited time to perform household visits due to other pressing responsibilities, and greater community interest in curative care. These projects developed solutions that did little to address many of the difficulties identified, and it is quite likely that this was also an important factor in limiting their success in introducing more preventive-oriented approaches.

It may be argued that communities are quite often justified in their preference for curative services, as poorly designed and targeted preventive and promotive activities have little effect. Some studies dealt with this issue by adding some curative services to CHW tasks when possible, and in some cases by strengthening health worker skills in preventive areas such as ORT, immunizations and growth monitoring that have been shown in recent studies to lead to appreciable improvements in health status. These "compromise" solutions, which include emphasis on both curative and preventive tasks as well as the focus on the selective child survival activities, appeared to have been successful strategies for meeting PHC objectives.

#### 4. MODE AND LOCATION OF SERVICE DELIVERY

The mode and location of delivery of PHC services was considered directly by three PRICOR-funded studies which addressed problems with inefficiency and low productivity in health care delivery, due to lack of rationality in the allocation and scheduling of PHC personnel and activities, and barriers to access to health services. The low level of home visiting and outreach activities encountered by studies in Uruguay and Swaziland was also an important operational problem, as was discussed in the previous section on the balance of promotive, preventive and curative tasks.

PRICOR-supported researchers devised a number of interesting solutions to problems related to mode and location of service delivery. The investigators' analysis of the local situation, as well as the constraints imposed by the type of health care delivery system in place, greatly affected the solutions proposed.

The researchers in the Bangladesh study began their investigation by exploring the problem of underutilization of PHC clinics in the Campaniganj subdistrict. PHC clinic services are free and managed by trained professionals, yet many rural people prefer alternative providers (private physicians; traditional healers, etc.). Analysis showed that the most popular providers were unqualified or semi-trained practitioners referred to as "Daktars". Household surveys indicated that in terms of availability and accessibility, place of treatment, travel and waiting time, and type of medications, the Daktars' services were more attractive to the villagers than PHC services. Only in terms of cost were PHC clinics preferred. The investigators used the Delphi group process technique to elicit suggestions from community members, health care providers, and local officials for improving utilization. Based on results of the Delphi exercise, as well as on an analysis of variables found to be predictors of utilization, they recommended that a PHC clinic staffed by a paramedic and a traditional birth attendant be established in every ward (a smaller administrative unit than that currently served by a health center), in an accessible site selected by community residents and PHC officials. The researchers also recommended that clinics hours be extended and that minimal fee-for-service charges be considered to provide incentives to health workers.

Researchers in the Bolivia study originally planned to reduce the high attrition rate of CHWs by devising a system through which stable salaries would be paid by the rural communities. Results from a household survey indicated that community members would be willing to support part of a health worker's salary only if he lived and worked exclusively in their community. Furthermore, smaller villages were financially unable to support an individual CHW. The solution selected for testing addressed the issue of mode and location of service delivery. Investigators proposed an alternative service delivery model whereby a lower level health worker (called a promoter) is trained and deployed to work in these outlying satellite villages. Promoters have been trained in seven communities and the CHW has been retrained to provide better services and supervise these lower level workers. During the first year of implementation, utilization rates of these promoters and the CHW have remained high, and families have made in-kind payments to support the purchase of medicines and the payment of the CHW and promoters' salaries. While its long-term sustainability has not been proven, the scheme appears to be a viable strategy for extending PHC services in these rural and underserved communities.

A third PRICOR-funded study in Jamaica investigated problems with the productivity of clinic-based primary health care teams. Problem analysis showed a tremendous inefficiency in the use of personnel within the PHC services. Non-productive time of health workers ranged from 26% to 66%, whereas, based on similar studies done in the private sector, it was estimated that such non-productive time could be kept below 25%. The researchers conducted a systematic analysis of factors effecting productivity and their interrelationships. Data were collected concerning personnel tasks and time utilization, clinic schedules, patient flows, waiting times, output, etc.

Productivity and cost indices were developed for each center and region. The researchers used a resource allocation planning model programmed on a microcomputer to determine alternative methods by which manpower could be allocated and clinics rescheduled. Runs of the microcomputer model for two districts in the Cornwall Region have provided projections on demand for service, personnel needs, cost of personnel, and clinic hours and configurations. The model's results indicate that services and population coverage can be significantly increased and that personnel costs can at the same time be reduced. New staffing patterns have been introduced in health facilities in the two pilot districts, and changes in productivity are being monitored. If the test is successful, the model will be used on a nation-wide basis as a planning tool for resource allocation.

It is difficult to generalize from these studies because the nature and the feasibility of the solutions developed varied according to the local context. The studies do indicate that a variety of strategies offer the potential for increasing the accessibility of PHC services, such as relocation of clinics and health posts, assignment of new workers to outlying villages, restructuring of services provided, reallocation of existing personnel, and scheduling of more convenient clinic hours.

### **C. Conclusions**

As these examples have shown, task specification was an important issue in a number of the PRICOR-funded CHW studies. Although issues of what tasks should be assigned or how CHWs' activities should be reorganized were rarely the only problems in a program, changes in this area were often a critical part of solutions proposed because of the significant influence that task selection has on other aspects of PHC programs, such training and supervision of CHWs and the acceptability and utilization of CHW services.

The major findings related to determining CHW tasks that were identified in this comparative analysis of the CHW studies are summarized below.

#### **1) Who participates in CHW task specification has important implications for the acceptance and effectiveness of health workers.**

PRICOR-funded researchers responded with a wide range of approaches to the question of who should determine CHW tasks. In some cases, choices for task selection were made by just one group, but in many instances innovative strategies were developed to involve both central and lower level groups and expand the range of groups involved at each level. Most studies found that broadening participation in task selection, while at times creating a more complicated decision-making process, offered a useful opportunity to consider a larger number of perspectives, enhanced the commitment of the various groups to the programs, and made it more likely that they would provide needed support in the future. Several studies developed and used innovative techniques to integrate the priorities of various groups. Methods such as brainstorming, nominal group technique, multiple criteria utility analysis, community diagnosis mapping, the solution development matrix, and the microplanning process appeared to have been useful for broadening participation in identifying and setting priorities for CHW tasks.

**2) There is no "best" approach to task selection for CHWs.**

No approach to task selection seems to be universally applicable; the appropriateness of a given mechanism depends on the CHW program objectives. PRICOR-funded studies successfully used at least three distinct approaches to the selection of CHW tasks: 1) basing selection on technical criteria such as which tasks would have the greatest impact on health status, 2) placing primary importance on health worker and community involvement in the choice of tasks they felt would best address local problems and priorities, and 3) selecting tasks that would best fit the traditional roles of the individuals that would perform the services. Results show that each approach can be quite useful for varying reasons. Techniques relying on technical criteria, such as limiting tasks to priority activities identified through analysis of the effects of various tasks on health status, can reduce overburdening of CHWs with too many activities and may be helpful in bringing down morbidity and mortality rates. Techniques emphasizing community involvement in task selection are quite useful in assisting a program in focusing on locally relevant activities and may help improve community acceptance of the program, thus increasing service utilization and coverage. The strategy of involving both health workers and either local health committee or community members in identifying problems and selecting appropriate activities to resolve them as part of CHW training appears to be particularly useful in initiating a self-reliant problem-solving process that can continue after training ends. Finally, approaches stressing selection of tasks that fit traditional roles may be successful for certain tasks, particularly if chosen service providers are already well accepted.

**3) Strategies that address community preferences for certain services can improve acceptability of CHWs and increase utilization.**

When CHW services are poorly utilized, frequently a conflict exists between community groups, who often seek more curative services, and providers, who tend to place greater emphasis on promotive/preventive activities. Some projects found that the best strategy for improving the acceptability of the CHW's role was to add certain curative services that communities wanted, sometimes resulting in fundamental changes in the nature of the CHW job description. Other studies found that the acceptance of preventive activities could be improved by strengthening CHWs' skills in effective child survival interventions which community members considered useful. An unexpected finding among several studies was that those which used approaches involving the community in problem identification and choosing CHW tasks appeared to be much more successful in increasing CHW activity in the promotive and preventive areas than those that relied to a greater extent on training and health education alone.

## Chapter III

### SELECTION OF COMMUNITY HEALTH WORKERS

PHC programs throughout the world have found that the specific characteristics of the individuals chosen to serve as community health workers have significant bearing on health worker effectiveness, stability, and community acceptance. Eleven PRICOR-funded studies examined criteria, participants, and/or mechanisms for CHW selection in existing PHC programs. Most of these studies developed improved selection strategies to be tested in the field. One of the eleven studies examined the CHW selection strategies of eight different voluntary health projects in India. Thus, some 18 different CHW selection strategies were studied.

#### A. Rationale for Operations Research on CHW Selection

Many PRICOR-funded investigators considered CHW selection as a problem after first identifying other problems with existing PHC programs. The Nigeria, CRCN study was designed in order to find solutions to the problem of CHW attrition in a church-sponsored rural health program. The researchers found that certain CHW characteristics were associated with higher attrition rates, so they decided to develop and test a new selection strategy. In the Ecuador study, the researchers examined barriers to community participation in PHC programs. They found that the selection requirements for CHWs did not include criteria important to the community and, furthermore, excluded persons considered good candidates by the community.

Researchers in the Philippines/UPCN study found that CHWs did not achieve adequate coverage of their communities. Part of the problem was due to the selection of CHWs who were not suitable for the job. In the Uruguay study, researchers looked at ways to increase community participation in PHC services delivered by polyclinics. Part of their solution involved developing selection criteria and mechanisms whereby community representatives could choose their own CHWs. Projects in Brazil, Haiti, Korea, and Liberia were faced with a lack of community health workers in the study communities and focused on selecting groups of community members (traditional healers, school teachers, adolescents, etc.) to carry out health-related tasks.

PRICOR-funded studies thus conducted operations research to improve the selection of CHWs in order to resolve a variety of problems with community acceptance, stability or performance of CHWs and to identify suitable candidates for new PHC activities.

#### B. Operational Issues Related to CHW Selection

When studying CHW selection strategies, a number of issues need to be resolved. First, who selects the CHW is an important factor in what type of person is selected, not only in the final selection of the CHW, but in the initial nomination and review of candidates. Community members might select a totally different person for the job of CHW than a health professional would, and the choices of each group may have important implications for how well the

CHW meets program objectives. Second, the specific mechanisms used for nomination, review, and selection influence the outcome of the selection process. For example, requiring candidates to pass a knowledge test may ensure that CHWs have a minimum level of knowledge before training. Third, the specific criteria used to select CHWs affect how well they function. Types of selection criteria include those that specify: 1) minimum capabilities of CHW candidates, such as literacy; 2) personal characteristics of CHW candidates, such as age and sex; and 3) subjective attributes of CHW candidates, such as maturity, sense of responsibility, interest in community work and ability to learn new tasks. The first two categories, minimum capabilities and personal characteristics, often serve as preliminary selection criteria (to identify a pool of candidates). The third category of selection criteria, along with other evaluations of candidates, is often the basis for the final decision of whether or not a certain candidate will be trained as a CHW.

Other CHW system components have bearing on the selection of CHWs. In particular, the tasks specified for CHWs help determine what type of person with what type of qualifications would be best to do the job. Programs which train CHWs for mainly disease prevention and health promotion roles may have very different selection strategies than programs that train CHWs to perform a mix of curative and preventive tasks. Ten of the 18 strategies studied were used to select CHWs to provide both curative and preventive services while eight strategies were used to select CHWs to carry out mainly community organization, health education, and/or health promotion activities. In some cases CHW tasks were taken as a given in developing selection strategies, while in others CHW tasks were determined only after decisions were made about who would serve as CHWs.

Whether or not CHWs are remunerated for their work also effects selection strategies. Eleven of the 18 strategies were designed to select paid CHWs while seven studies were for the selection of volunteer CHWs. Selection strategies for paid CHWs were more likely to set extensive selection criteria (something beyond literacy and community residency) than strategies for volunteer CHWs. The Philippines/UPCN study found that it was infeasible to set extensive selection criteria for volunteer CHWs because there were few villagers who were willing to volunteer their time to do community health work.

Most of the PRICOR-funded studies focused on the participants in CHW selection and the selection criteria. While the selection strategies studied by the PRICOR researchers used a variety of mechanisms for CHW nomination, review, and selection, few of the PRICOR studies identified problems with or carried out research on the mechanisms being use to nominate, review, and select CHWs in existing PHC programs. In most cases, greater importance was placed on determining who would select CHWs, leaving decisions about the mechanism to be used to the participants. Therefore, PRICOR-funded study findings and results presented in the following sections will focus on CHW selection participants and criteria.

## 1. PARTICIPANTS IN CHW SELECTION

In the CHW selection strategies studied or tested by the PRICOR-funded researchers, selection was done by a variety of groups including entire communities, village health committees, village elders, village councils,

health project directors or other staff (often health professionals), health professionals from the MOH, community development workers, researchers, and combinations of the above. Out of the eighteen strategies, nine had some sort of community involvement in selection, while the other nine had no community involvement in selection. Those strategies which did not involve the community used health professionals, project managers, or researchers.

In the Uruguay study, the researchers conducted a survey of 849 households and 20 structured interviews with key informants (community leaders and polyclinic staff). A few of the items on the questionnaires elicited respondents' opinions on persons, groups, or organizations who could work with other community residents to solve local health problems. Based on the survey and interview results and on their own observations and experience, a group composed of polyclinic staff, representatives of various community organizations, and a researcher selected community members to serve on the health committee or be CHW candidates. The committee members then participated in the selection of CHW candidates.

In the Ecuador study, the researchers designed a CHW selection strategy which incorporated the viewpoints of both the villagers and the MOH. In their recommended strategy, criteria having to do with minimum capabilities of the CHWs (e.g., literacy, educational level, skills) should be specified by the MOH while criteria having to do with personal characteristics of the CHWs (e.g., sex, age, marital status) should be specified by the community to be served.

In the India study, the researchers discovered that several of the voluntary health projects had both community and institutional input in their CHW selection strategies. In the Tribhuvandas Foundation, members of milk cooperatives are responsible for setting selection criteria, nominating, reviewing, and selecting CHWs. The project staff assist them in this process. In the Jamkhed Project, the village elders determine the selection criteria. Nomination, review, and selection are carried out jointly by the project staff and the village elders, but the village elders have the final say as to who will be selected. In the Jaipur Project, the chairman of the village self government committee sits on the CHW selection committee and participates in determination of selection criteria, nomination, review, and selection of CHWs. In the Agrindus Project, representatives from a sector (group of villages) select a "village doctor" who is more a paraprofessional than a CHW. After a year's training, the village doctor selects a CHW for each village in his or her sector.

Community participation in CHW selection yielded mixed results in terms of the capabilities and acceptability of the CHWs chosen. The India study found that both favoritism and caste discrimination were problems experienced by the eight voluntary health projects where communities selected their own CHWs. In villages with sharp caste differences, it was difficult for community members to decide on a person who would be acceptable to everyone. In villages where local leaders selected the CHWs, it sometimes happened that the leaders selected an individual who, by objective criteria, did not compare well with other candidates. Other studies, such as the Uruguay and Bolivia projects, found that selection of CHWs by the community was beneficial or even essential for obtaining candidates who were socially acceptable and trusted by community members.

Many PHC programs have found that it is best to allow those who will be paying the CHW's salary to select the health worker since people seem to be more willing to pay to support a CHW if they feel that he or she is their own choice. Out of ten CHW programs studied by the PRICOR researchers in which community members contributed towards the CHW's salary, nine involved community members in the selection of the CHW. The one exception was the Adayar Health Project examined by the India study. Even though community members contributed to CHW remuneration through service fees, they had no role in selection of the CHW. The project staff explained that selection was done by health professionals in order to avoid the "political bias" that would occur if CHW selection was left up to village councils. In the two programs in which CHW salaries were paid by the government or the health project only, CHWs were selected by researchers or other health professionals. In five programs, CHWs were paid with contributions from both community members and the government or the health project. The majority of these had both community and government or health project participation in CHW selection.

It is difficult to characterize the relative effectiveness of community involvement in CHW selection versus that of health professionals because the studies were different in many other characteristics as well. A case can be made for community participation in CHW selection to enhance the acceptability of CHW candidates, to obtain community support, and to increase communities' sense of ownership of PHC programs. Under some circumstances, however, it appears that community participation in selection may not be essential. Based on the experience of PRICOR-supported studies, such circumstances include when: a) a program is working with a specific group of people in the community because their traditional roles predispose them to perform CHW tasks; b) there are not enough volunteers to be able to do any real selection; c) the services that CHWs will be delivering are already so popular in the community that community participation in selection is not essential and selection can focus on the capabilities of candidates; d) there is some specific reason why community participation in selection would result in CHWs who were ineffective, unacceptable, or unstable; and e) communities are not asked to contribute to CHW salaries.

## 2. SELECTION CRITERIA

As described earlier, selection criteria for CHWs can be organized into three general categories: 1) minimum capabilities of CHW candidates, 2) personal characteristics of CHW candidates, and 3) subjective attributes of CHW candidates. Each category will be discussed separately below.

### a. Minimum Capabilities

Selection criteria examined by PRICOR-funded studies that specified the minimum capabilities of CHWs usually were concerned with educational levels, literacy, skills, and experience. These criteria were frequently set in order to ensure that CHWs would be able to perform their specific health care tasks competently, although some studies examined the relation between CHW educational levels and CHW stability. Seven of the 14 CHW selection strategies for which information on selection criteria is available set some sort of literacy or educational requirements. These requirements ranged from basic literacy to completion of primary school. Only one strategy required that CHWs pass some sort of knowledge test to demonstrate minimum capabilities.

A few of the studies found problems related to the capabilities of CHWs. For example, researchers in the India study found that one of the voluntary health projects being studied had initially employed only highly trained and educated nurse midwives as CHWs. These women did not stay in the rural areas for long because of lucrative jobs elsewhere, marriage, and feelings of insecurity in unfamiliar villages.

In the Nigeria/CRCN study, researchers and CHW trainers used nominal group technique to develop solutions to the problem of high CHW turnover. One of the five main reasons for attrition identified by the group was the fact that many CHWs had relatively high educational levels. Highly educated CHWs were often unsatisfied with the simple tasks assigned to them and, more often than not, wanted to go on to higher training after a short work period. The group concluded that secondary school graduates should not be trained as CHWs and recommended that the Rural Health Program select individuals who had no more than a primary school education for community health work.

Researchers also found that setting certain minimum criteria for CHWs sometimes conflicted with other criteria, such as community residence. Studies developed different solutions to these problems based on the particular setting and the specific objectives of the PHC program. In the Bolivia study, researchers found that specifying that CHWs be literate would have required the selection of persons from outside the closed, indigenous communities in the project area. The investigators opted for selecting illiterate CHWs, who were acceptable to the community, but for whom special pictorial training materials had to be developed.

The Brazil/JHU study looked at the minimum capabilities required of CHW candidates by the Fundação Serviços Especiais de Saúde Pública (FSESP). The researchers found that visitadora candidates were required to have completed six years of primary school education and to pass a knowledge test (among other requirements) in order to be selected. FSESP officials considered that meeting the established criteria was more important than having the CHW be a member of the community. If no young women in the village to be served could meet the educational and knowledge requirements, CHWs were recruited from a nearby town. FSESP was able to find candidates who met these strict requirements because they paid high salaries and many young women were interested in the job.

#### b. Personal Characteristics

The PHC programs studied by PRICOR-funded researchers set a variety of criteria for the personal attributes of CHWs, including sex, age group, health status, place of residence, social role/status, marital status, and occupation. In three cases, it was specified that CHWs be female, presumably because of the maternal and child health emphasis of primary health care. Three programs set age requirements which ranged from 18 to 40 years. One program required that CHW candidates pass a health exam before being selected.

The majority of the CHW selection strategies studied had a community residency requirement for CHW candidates. Of those eight programs which stated reasons for setting this requirement, seven did it to assure community acceptance of CHWs while one did it to assure CHW stability.

In four programs studied, specific groups in the community were chosen to be trained in some CHW tasks because their traditional social roles were considered to be facilitating factors for certain promotive and preventive activities. The Haiti/AOPS study worked with community leaders such as school teachers, students, village leaders, religious leaders, and traditional birth attendants. The Liberia/CUC study selected adolescents who traditionally had responsibilities for caring for younger children and cleaning their homes. The Korea study trained leaders of formal and informal organizations to act as health promoters.

In the Brazil/UVA study, the researchers were concerned with reducing morbidity and mortality due to diarrheal diseases using ORT. Since no appropriate health workers were available to promote, use, and teach ORT, the researchers turned to the community to see who could fill this role. They discovered that traditional healers were good candidates because they were: a) located in the rural areas where the diarrhea problem was greatest, b) accustomed to treating children with diarrheal diseases, and c) far more numerous than physicians and thus could maintain greater contact with patients. Moreover, a household survey carried out by the researchers showed that traditional healers were the first health care providers sought by 76% of mothers when their infants had diarrhea.

PRICOR-funded researchers found that problems can occur because of the personal characteristics of CHWs. Researchers in the India study found that, in many cases, low caste CHWs were not allowed to enter the homes of higher caste villagers and high caste CHWs would refuse to enter the homes of lower caste villagers. These situations impeded the CHWs' effectiveness in covering the whole community. The Nigeria/CRCN researchers found that in their program area the average length of service was 3 years for men and only 1.5 years for women.

Several PRICOR-funded studies developed new selection criteria for CHWs in attempts to solve some of the service delivery problems related to the personal characteristics of CHWs.

Based on an analysis of the characteristics of active CHWs and former CHWs who had left service, the Nigeria/CRCN researchers and a group of CHW trainers identified new selection criteria that would contribute to CHW stability. New CHWs selected by the CRCN Rural Health Program over the next five years will be from 25 to 40 years old and married.

In the Uruguay study, members of community health committees selected CHW candidates based on a uniform set of preliminary CHW selection criteria that the researchers believed would contribute to CHW effectiveness. Some of these criteria concerned personal attributes that CHWs should have including residence in the community, age 18 years or older, and availability of at least 6 hours of free time per week to devote to community health work.

In the India study, the researchers talked to project directors, project staff, and community members in order to determine the best way to overcome caste differences when selecting CHWs. Many of those interviewed felt that best solution would be to select someone from a low caste who might ultimately prove to be widely acceptable. This strategy had been implemented with success in some health projects. For example, in Jamkhed, the CHWs reported

that, before CHW training, untouchables had not been able to enter the homes of higher caste villagers. During training, CHWs from different castes ate together, many for the first time in their lives, and slept together under a single large blanket. Furthermore, they learned health care skills that most community residents, including those of high caste, perceived as valuable. The CHWs returned to their villages with new confidence and soon found that nearly all villagers, regardless of caste, welcomed the CHWs in their homes because they saw that the CHWs chosen were competent in highly valued PHC skills.

### c. Subjective Attributes

Some CHW programs include more subjective criteria in their evaluation of CHW candidates. Examples of this type of criteria include acceptability to the community, maturity, sense of responsibility, willingness and ability to learn, and interest in community work. Problems such as CHW drop-out and low utilization of CHW services may result if CHWs do not possess these attributes. However, qualities such as maturity or willingness to learn are difficult to measure and were only included as specific selection criteria in a few of the studies. It was observed in some studies that PHC program managers assume that the selection criteria for minimum capabilities and personal attributes will ensure that CHWs have the above mentioned qualities as well. For example, managers may assume that because a CHW is a community resident, he or she is acceptable to the community, although this may not always be the case.

In the Philippines/UPCN study, the researchers developed and administered a series of psychological tests in order to gain more insight into the subjective attributes of successful and unsuccessful CHWs. It was anticipated that the personality portraits developed through use of these tests would be compared to CHW performance indicators and the results used to determine optimal selection criteria for CHWs. Although this analysis was not completed in the course of the study, the researchers did identify some personality traits possessed by more successful CHWs, including: high level of self-esteem, ambition, fortitude, creativity, patience, inquisitiveness, helpfulness, and sense of responsibility.

In the Uruguay study, the selection criteria used by the community health committees to select CHWs included a few subjective attributes. CHWs were expected to a) have an interest in community health problems; b) be accepted by the community; and c) be able to communicate well with groups and individuals in the community. Interviews conducted by members of the neighborhood health committees with the CHW candidates were used to determine if they possessed these attributes.

In the India study, the researchers found that the Jamkhed Rural Health Project in Maharashtra set specific selection criteria for the subjective attributes of CHWs. These attributes included interest in and enthusiasm for serving the community and willingness to learn. Village elders were responsible for identifying people in the community who had these qualities. They were able to do this because they knew most of the villagers personally. The experience of the staff of the project has been that the subjective criteria are more important for good CHW performance than education or social status of candidates.

While subjective attributes were identified by several studies as important selection criteria, further research is needed to develop objective methods for measuring subjective qualities of CHW candidates before training.

### **C. Conclusions**

PRICOR-supported studies have demonstrated that the selection of CHWs can be problematic for PHC programs and can have significant bearing on CHW effectiveness, stability, and community acceptance. The studies have also shown that it is possible to develop creative solutions to problems with selection participants, mechanisms, and criteria. The major findings related to CHW selection that were identified in this comparative analysis of the health workers studies are summarized below.

#### **1) Who selects CHWs influences what type of person is selected and has important implications for the acceptance, stability and effectiveness of the health worker.**

Researchers found that a wide variety of groups participated in CHW selection, including: whole communities, village health committees, village elders, village councils, voluntary health project directors or other staff (often health professionals), MOH personnel, community development workers, researchers, and combinations of the above. They also found that when community residents selected their CHW, they often chose a different person than a health professional or a researcher might have chosen. If the CHW was selected by community representatives, he or she tended to be acceptable to the community at large, but did not necessarily have the capabilities that health professionals might consider necessary for effective community health work. If the CHW was selected by institutional representatives, such as researchers or health project directors, he or she tended to have capabilities such as literacy or health-related skills, but was not necessarily acceptable to the community. Since, in many cases, both community acceptance and minimum capabilities are necessary for CHWs to be able to perform their assigned tasks, this situation presents a dilemma for many PHC programs.

#### **2) Both community and institutional preferences can be successfully integrated into a single CHW selection strategy.**

Some PRICOR-supported researchers examined or designed strategies that involved both community members and health professionals in CHW selection. The degree of community participation in these strategies varied, ranging from strategies in which one community member sits on the CHW selection committee, largely composed of health professionals and researchers, to approaches in which community representatives are wholly responsible for nomination and selection of CHWs, with health professionals simply providing assistance when necessary. Such attempts to obtain both community and professional input in the selection of CHWs appear to be effective strategies for ensuring that CHWs are capable of carrying out specified tasks and acceptable to the communities they serve.

3) Optimal criteria need to be determined to fit specific communities and PHC programs.

Criteria for minimum capabilities, personal characteristics, or subjective attributes of CHWs do not seem to be universal. Examination of the CHW selection criteria used in the PRICOR-funded studies illustrates the variety of CHW attributes and capabilities which different programs view as essential. Since CHW tasks, social and cultural factors, and alternative employment opportunities vary considerably from place to place, no single set of selection criteria would be uniformly appropriate. In PRICOR-funded studies, specific criteria were usually set in order to increase community acceptance, stability, or effectiveness of CHWs. Criteria for minimum capabilities, such as literacy or educational level, were usually set in order to ensure that CHWs had the skills and knowledge needed to perform their jobs effectively, although two programs put upper limits on educational levels in order to increase CHW stability. Criteria for personal characteristics, such as sex or marital status, were usually set in order to ensure community acceptance of CHWs or CHW stability. Selection strategies must be developed based on local factors and on the specific objectives of each PHC program.

## Chapter IV

### TRAINING OF COMMUNITY HEALTH WORKERS

Training is one of the major components of any program that seeks to rely on community health workers for provision of primary health care. Eleven PRICOR-funded studies developed or improved strategies for training community health workers. Three studies focused on in-service training, while nine studies focused on pre-service training.

A variety of types of CHWs were studied by PRICOR-supported researchers including volunteer CHWs, paid CHWs, traditional birth attendants, traditional healers, school teachers, adolescents, community leaders, shopkeepers, and mothers. Two studies researched ways to train community members to promote health and prevent diseases in the course of their normal activities, while the remaining ten studies researched ways to train CHWs to provide PHC services as full- or part-time jobs. Some of the studies developed training programs which emphasized specific topics, such as nutrition or microplanning, while other programs covered a wide range of preventive and curative skills and knowledge.

The duration of pre-service training programs ranged from 1 day to 5 months, while in-service training programs lasted from 5 days to 4 weeks. Types of health care personnel acting as trainers included midwives, nurses, doctors, nutritionists, and researchers. Most of the CHW training activities were held at the community level at a location easily accessible to all the participating CHWs. A variety of innovative techniques and materials that were developed and tested in these training programs will be discussed in this chapter.

#### A. Rationale for Operations Research on CHW Training

PRICOR-funded researchers studied CHW training because they saw it as a key component in solving specific problems with the PHC delivery systems in the study communities. For example in the Haiti/CS study, the researchers saw that maternal morbidity and mortality rates were unacceptably high despite the implementation of a maternal health care system which incorporated trained traditional birth attendants (TBAs). This led the researchers to examine the performance of trained TBAs, and they found that the TBAs were only carrying out three of their seven assigned tasks. To find out why, the researchers looked at various aspects of the TBA support system and found training to be inadequate. Researchers in the Liberia/CUC study researched ways of training adolescents to carry out health promotion tasks because there were no primary health care providers available to the study communities. In the case of the Philippines/IPH study, researchers were looking for ways to improve the delivery of nutrition services to villagers and thus improve nutritional status. After extensive interviews with CHWs, CHW trainers, and villagers and a review of the existing CHW training manual, they discovered that the existing CHW training did not adequately cover important nutrition topics.

## B. Operational Issues Related to CHW Training

When studying CHW training, PRICOR-funded researchers found that certain decisions were key to the success or failure of a training program. Decisions had to be made about the content of the training, the methods to be used in training, training materials, and the personnel who would train CHWs. Operational issues such as where the training would be held, how long the training would last, when training would occur, and how many CHWs would be in each class also had to be determined. Finally, how the effectiveness of training would be evaluated, how CHWs' skills and knowledge would be "refreshed" over time, and how replacement CHWs would be trained had to be decided.

In some of the existing CHW training strategies studied by PRICOR researchers, these decisions were made by higher level managers in the Ministry of Health, often with advice from outside consultants. Local level managers, communities, and CHWs themselves were rarely involved in the decision-making process. In many cases, decisions about CHW training program design were not the result of research to determine the best option for each element in the training design, but rather were based on the intuitive judgment and experience of decision-makers and/or consultants.

Many of the PRICOR-funded studies represent a departure from this standard model for designing CHW training programs. These studies used operations research techniques to make some of the major decisions in designing a CHW training program. Perhaps most importantly, these studies specifically involved those who would participate in the actual implementation of the training program (local level managers, communities, CHWs, trainers, etc.) in this decision-making process. Major areas of focus for the PRICOR-funded studies were training content, training approach/methods, trainers, training location, and training duration/timing. The following sections discuss these major areas of focus in detail. Each section covers the related problems identified by the researchers, the processes followed to develop and choose between alternative solutions to those problems, and the solutions chosen by the researchers as a result of these processes.

### 1. TRAINING CONTENT

In looking at the content of existing CHW training programs, the researchers identified a variety of problems that could potentially be resolved using operations research. In the Philippines/UPCN and Papua New Guinea studies, the researchers found that CHW training program content lacked topics such as disease prevention, health promotion, or overall community development. Researchers in the Philippines/IPH study found that the existing training modules did not adequately cover important nutrition topics, such as protein-energy malnutrition, growth charts, or nutrition rehabilitation. In the Philippines/UPCN, Bolivia, Haiti/CS and Mexico studies, CHW training content was found to include too many topics for the designated training period and CHWs to handle. In the Ecuador study, the researchers found that CHW training content did not include orientation to the cultural, ecological, and socioeconomic context of the communities in which the CHWs served. In a similar vein, the Mexico study found that centrally specified training content did not fit the specific needs of local communities. The Haiti/CS study found that TBA training content did not put enough emphasis on the recognition and referral of high risk pregnancies.

In analyzing alternatives for the content of CHW training, the researchers found that there were some basic tradeoffs involved. Given the fact that time and resources for CHW training are often limited, a conflict exists between emphasizing technical skills and emphasizing general community organization and development skills. In the Ecuador study, the researchers felt that the content of CHW training should relate to specific health problems of the community and traditional health beliefs. Yet, general health care knowledge and skills are also essential to community health work.

The tasks specified for the CHWs (see Chapter II, "Specification of CHW Tasks") guided the researchers in deciding what topics to focus on in CHW training programs. Many researchers also used the results of community surveys for useful background information on community health needs and behavior. Decision models, such as multiple criteria utility assessment (MCUA), nominal group technique, preference and interaction matrices, and Delphi technique, were used with the people most directly involved in the training programs to choose between alternative topics for CHW training. These techniques enabled the researchers to take into consideration the advantages and disadvantages of each alternative and to incorporate the opinions and perspectives of a variety of participants.

In the Philippines/IPH study, the researchers initially assessed the existing CHW training manual for nutrition content, interviewed CHWs regarding their nutrition activities, interviewed CHW trainers, and surveyed households to determine their nutrition KAP. This information was utilized by a Ministry of Health working group to develop objectives for the CHW training program in nutrition. The group decided that, after training, CHWs should be able to: 1) identify the nutritional status of household members; 2) carry out selected nutrition activities; and 3) monitor the nutritional status of households. Based on these objectives, the group generated nutrition topics to be included in CHW training. The MOH working group then used MCUA to evaluate the various nutrition topics in terms of their value in reaching the objectives that had been set for CHWs. Using this technique, they ranked the various topics in terms of the time that would be devoted to them in training.

In the Liberia/CUC study, researchers used household surveys to identify frequently occurring health problems and typical tasks of adolescents. The researchers and an advisory committee (composed of officials from Cuttington University College, the Ministry of Health, the Ministry of Education, and the local health system) brainstormed and reviewed literature on the control and management of the frequently occurring health problems and identified specific tasks that would help prevent those problems. The group then constructed an interaction matrix which matched adolescents' traditional tasks with disease prevention tasks. Possible health-related tasks for adolescents were then ranked in order of importance using the nominal group technique, and written training modules which dealt with these topics were designed.

In the Haiti/CS study, the researchers designed a new TBA training course that reduced the number of topics covered from 27 to five critical topics. The new content placed more emphasis on recognition and referral of high-risk pregnancies. It also included two new nutrition messages for TBAs to pass on to new mothers: 1) eat an extra meal a day (ante- and post-partum) and 2) give only breast milk to the newborn until age three months.

## 2. TRAINING APPROACH AND METHODS

A few PRICOR-supported researchers studied the specific approaches and/or methods used in training CHWs. Researchers in these studies found that the techniques being used in existing programs to train CHWs did not assure retention of knowledge and skills or translation into practice. In the Haiti/CS study, researchers found that the formal, didactic training approach traditionally used to train TBAs was not as effective as it could be. TBAs were only carrying out three of the 12 tasks assigned to them. Researchers in the Ecuador study found that CHW training primarily used lectures and written exercises instead of practice in the skills needed to perform CHW tasks. The methods being used were especially inappropriate for many indigenous CHWs who were barely literate and more accustomed to learning by experience than by formal teaching techniques. In the Philippines/UPCN study, researchers found that use of lectures rather than skill development exercises in CHW training resulted in CHWs with vague knowledge of how exactly to perform their assigned tasks.

Tradeoffs exist in selecting the appropriate training methods for a particular CHW training program. Classroom training is easier logistically, but hands-on training in the community is more effective in teaching the practical skills necessary for community health work. Demonstrations, role-playing, and practice may be the most effective techniques for teaching CHWs, but many of the available trainers are unexperienced in these techniques and favor the more traditional lecture and discussion approach. For example, researchers in the Ecuador study found that CHW trainers were inexperienced in informal, participative teaching techniques and consequently used only conventional, authoritative training methods.

A few PRICOR-funded studies used operations research techniques to choose between alternative training methods or compare the effectiveness of new training methods with those used in the existing CHW training program. In most cases, however, researchers used whatever training methods they felt most appropriate in their new training programs without using OR techniques. Most studies adopted a competency-based rather than a traditional lecture-oriented approach to CHW training. Training methods commonly used in the PRICOR-funded studies included lectures, discussions, demonstrations, games, role-playing, and actual practice in the communities.

The Uruguay study used a variety of group dynamics exercises to train CHWs in health promotion and community organization techniques. In a session designed to teach cooperation and working in teams, trainees played a game called "cooperative squares." This game is a group dynamics exercise that reinforces the need for cooperation and coordination in group work. In a later session on medical care, role-playing was used to demonstrate different community attitudes concerning a single health problem.

In the Papua New Guinea study, a group composed of health program administrators, mid-level managers, CHWs, and researchers compared three different alternatives for training CHWs which differed in terms of the training methods to be used, the training location and the participants. The first alternative used classroom lectures only. The second alternative relied on a combination of practical training in the community and workshops. The third alternative used workshops followed by group discussions which included

the villagers as well as health workers. Using the technique of MUA, each strategy was evaluated based on its ability to meet the objectives set for the training, its ability to handle health system constraints, and its cost. Based on these assessments, the group selected the third strategy, which used workshops followed by group discussions, to be tested in the field. Before actual implementation, the researchers developed specific training techniques based on this strategy which were used successfully with health workers and community leaders to identify priority problems and actions that could be taken to address them in the study communities.

In the Philippines/UPCN study, training methods were selected in a series of solution development meetings involving CHW trainers from the study areas, MOH nursing consultants, and the researchers. The group reviewed problems with the current training program (identified during the first phase of the research) in the context of a conceptual model of the CHW subsystem. They decided that one problem was the use of lectures rather than participatory skill development exercises. Next the planning group identified "training approach/methods" as the variable that could be manipulated in order to solve the problem. The group also identified constraints and facilitating factors relating to training approach/methods. A key facilitating factor was the fact that the recently developed MOH training course for CHWs specified that one-fifth of the training time be spent on lectures and four-fifths be spent on practicum (which emphasized skill development). The group decided that the relative time allotted to these two aspects of CHW training was appropriate and that they could adopt these methods with modifications for each study site where necessary. In the revised training strategy, lectures were supplemented with group "warm-up" exercises, audio-visual presentations, and demonstrations.

### 3. TRAINERS

The selection of appropriate trainers is often key in assuring that CHWs get the most out of their training. Many PHC program managers have found that CHW training is most effective when trainers have been specifically trained in how to train CHWs. In some cases, trainers who speak the local language and who can relate to the CHWs are more effective. In looking at existing CHW training programs, some of the PRICOR investigators found problems with the trainers being used. In the Ecuador study, the researchers found that CHWs were trained by whatever MOH personnel happened to be available when the time for CHW training came around. These trainers were from urban areas with little rural experience and taught in Spanish instead of the indigenous language spoken by many of the CHW trainees.

In some of the CHW studies, the researchers found that conflicts arose in deciding who would train the CHWs. Experienced local or mid-level health workers may be the best CHW trainers, but in many cases these health personnel are not available for CHW training. In other cases the choice of trainers is facilitated by the availability of health workers who have already completed courses in how to train CHWs. In the Philippines/UPCN study, the MOH had designated midwives as CHW trainers and given them a one-week intensive course in how to train CHWs. The Brazil/JHU study found that FSESP program managers were able to select CHW trainers from a pool of supervisory nurses who had completed a two-month "training of trainers" course. In many cases, these trainers later provided regular supervision for the CHWs whom they trained.

Researchers in the Liberia/CUC study found that the few mid-level health workers in the study area were too busy providing health services and supervising other health workers to take on the additional responsibility of training adolescents in preventive health tasks. Instead, the research team decided to use school teachers as trainers. The teachers were already in the schools, had daily contact with adolescents, and had knowledge of local customs.

In the Philippines/IPH study, a group of MOH decision-makers and the researchers selected a training team composed of public health nurses, midwives and nutritionists as the best leaders for CHW nutrition training. These team members worked well together in the CHW training program implemented in the study.

In the Ecuador study, the researchers designed a new CHW training strategy which used a multidisciplinary training team. They recommended that this team include persons with expertise in three areas: health, indigenous cultures, and popular education/communication. Representatives from the MOH Department of Community Development, nurses, and nurse auxiliaries (who were responsible for supervision of CHWs) were recommended as the health specialists. Representatives from county or provincial level community organizations were recommended as the experts on indigenous cultures. The provincial level health educator was recommended as the education and communications specialist.

#### 4. TRAINING LOCATION

Worldwide, a variety of locations for CHW training have been tried with varying rates of success. Some programs bring CHWs from remote areas of the country to the capital city for a central training course. Other programs provide CHW training at the regional or state level. Recently there has been a trend towards training CHWs at the local level. This can mean that training is provided in a nearby town, at a conveniently located hospital or health center in the area, or in the villages where the CHWs will eventually serve.

During the problem analysis phase of their research, some investigators identified problems with the locations currently being used for CHW training. In the Ecuador study, the researchers found that CHW training was held in a regional MOH training center which was distant from the villages where CHWs lived and worked. CHW trainees had to leave their communities and their income-generation activities for an extended period of time in order to attend the training course. On the other hand, researchers in the Philippines/IPH study found that trainers were dissatisfied with the location of CHW training in villages. They complained about the lack of allowances for their travel to and from the villages for the training sessions.

Choosing a location for CHW training has often been problematic for PHC managers because while centralized training is much easier to manage than training held in several widely scattered communities, training sessions are much more convenient for the trainees if they do not have to leave their communities for the duration of the training course. Training is also more likely to relate to local health problems and needs if it is held on the local level.

Nine of the eleven PRICOR-funded CHW training studies examined or tested new training strategies at local sites. The two exceptions were the Brazil/JHU and the Mexico studies. Researchers in the Brazil/JHU study found that in the FSESP program, the first phase of CHW training was successfully held at an accessible central location within each region with minimal transportation costs. The second phase of training consisted of internships in rural health facilities. In the Mexico study, training in the microplanning process was given at a central location in the state of Mexico. The majority of the studies for which information is available on why a certain training site was chosen selected their location based on logistical considerations.

In the Papua New Guinea study, the advisory group used MUA to determine the location of CHW training, as well as other aspects of training discussed above. Alternatives considered were to hold the training in Vunapope, a coastal town that is the headquarters for the Church Health Service; locate the training in health centers which are closer to the communities; or identify a central village as the location for CHW training. Comparison of the three strategies indicated that the third alternative would best meet the training objectives at an acceptable cost and would provide an opportunity for practicing the techniques taught in a community similar to those where the health workers would be assigned.

In the Ecuador study, the researchers felt strongly that CHW training should provide general health care delivery skills and relate to specific community health needs and behaviors. To respond to this requirement, the researchers designed a new two-stage CHW training program. In the first stage, which would focus on specific curative and preventive health care skills, would be carried out in the provincial capital or county seat. The second phase, which would emphasize regional specificities and planning of activities related to the CHW's own community, was to take place at the local level, where the CHW's supervisor was located.

## 5. TRAINING DURATION AND TIMING

Duration and timing of CHW training sessions are important factors which, if ignored, can result in poor trainee attendance, undertrained CHWs, or overtrained CHWs. In analyzing existing CHW training programs, some of the PRICOR-funded researchers found that the length or frequency of the sessions was not optimal. In the Philippines/UPCN study, the research team conducted interviews with 33 CHWs in the three study areas and found that CHW trainees had difficulty attending the entire training program, which included six to eight lectures followed by a practicum of varying length. Researchers in the Philippines/IPH study interviewed the CHW trainers from each of the four study areas. The trainers felt that the average time allotted to nutrition topics in CHW training (about four and a half hours) was too short for the CHWs to adequately absorb the skills and knowledge they needed.

Researchers commonly encountered constraints on the availability of trainers and trainees that had implications for the duration and timing of CHW training activities. These factors included: a) the time that trainees can spend away from income-generating activities; b) the other responsibilities of the trainers; c) the availability of funds to pay participant per diem; and d) other factors specific to the community. For example, in the Mexico study, in-service training for CHWs was scheduled on a part-time basis so as not to

completely disrupt the regular service activities of the CHWs or their supervisors, who conducted the training.

PRICOR-funded studies demonstrated that decisions about the duration and timing of CHW training benefit from a solution development process which includes input from CHWs, trainers and, in some cases, service providers. Using various group process techniques, alternatives may be considered systematically so that the one most feasible for both trainers and trainees is selected.

In the Philippines/UPCN study, a working group of CHW trainers, MOH nursing consultants and the researchers adopted a standard five-week training program, but left to the trainer and the participant CHWs the decision about how the time during the weeks would be programmed because of the limited availability of both groups. In one of the training sites, trainers and trainees decided to meet for two half-days in the beginning of each week and spend the rest of each week practicing skills on their own time. In another site, the participants opted for one day of lectures followed by four days of practicum each week. The third training group chose to have one week of lectures followed by four weeks of practicum.

In the Philippines/IPH study, a group composed of MOH decision-makers and the researchers initially proposed that training sessions for a five-day nutrition course for CHWs last four hours and be held every other day. After further consultations with health service providers, the researchers decided to implement a schedule of four hours per day, five days in a row. The service delivery personnel felt that five straight days of training would be more likely to sustain the interest of the CHWs than a staggered schedule.

### C. Evaluation and Results

PRICOR-funded researchers used a variety of methods to evaluate the effectiveness of CHW training strategies. Methods commonly used included: written tests to determine whether CHWs had retained the knowledge transmitted to them in training; interviews with CHWs to ascertain if they had changed the ways they deliver PHC services as a result of the training; observations of CHW activities after training; case studies to assess changes in PHC program effectiveness; and household surveys to determine any changes in health knowledge, attitudes and practices (KAP) or health status of the target population.

At the time of evaluation, many of the CHW training strategies developed by the studies had only been recently implemented. Thus, it was unlikely that many significant changes in community health behavior or health status could be measured. Most study evaluations therefore focused on changes in CHW knowledge and practices. However, in some cases where the intervention has continued for a substantial amount of time, improvements in the KAP of beneficiary populations have been measured.

At the conclusion of the nutrition training provided by the Philippines/IPH study, CHWs and their midwife supervisors worked together to develop action plans for delivering nutrition services and carried them out in their communities. For example, in one community, the plan included organizing

community classes on nutrition and on proper use of herbal medicines, conducting home visits during the month of July, and conducting home weighing sessions every second quarter of the year. A survey of mothers carried out in the study villages after the CHWs had received the nutrition training showed that mothers' participation in the nutrition-related activities increased immediately after training. In two of the three experimental areas, however, community participation in nutrition activities later declined as CHW interest waned; in the third area, there was a progressive increase in community utilization of nutrition services. The success of the third village was attributed to the active support of the midwife and village leaders for the CHWs' nutrition activities. Based on this result, the researchers concluded that for CHWs to be successful in delivering nutrition services, training needs to be supplemented by strong supervision and support from community leadership.

According to the results of interviews with a small number of community members, adolescents trained in the Liberia/CUC study have learned the new health curriculum and begun to use the information in their daily activities. The evaluation survey found that eight of the nine teachers interviewed had actually seen the adolescents apply lessons from the health modules. Nine of the 11 parents interviewed said that they had received health advice on such subjects as ORT and first aid from their children.

In the Haiti/CS study, researchers trained one group of traditional birth attendants using the standard 27-session training course (Group 1) and another group using the new five-session course designed in the study (Group 2). The two groups of TBAs were then assigned to cover different neighborhoods in the study area. Because of an existing population-based registry system, the women covered by the two different groups of TBAs could be followed throughout their pregnancies and subsequent deliveries to determine the effects of the two different training approaches. The researchers interviewed women served by both groups of TBAs to determine the presence of risk factors during pregnancy; utilization of pre-natal care, delivery and post-natal care services; and the outcome of pregnancy. The only significant difference between the two groups of women was that more high-risk women served by Group 2 TBAs received prenatal care and delivered in the hospital. Based on this result, the TBA trainers decided to adopt the new shortened course for all TBAs.

Researchers in the Papua New Guinea study conducted case studies of each of the training sites to determine the effects of the new training strategy. They found that, in many of the sites, health workers and community members had worked together to develop concrete plans for community development projects and had carried them out. In Nutuve, for example, the village development committee constituted by the health worker, teachers and community leaders was able to mobilize community and Church resources necessary to construct pit latrines and water tanks and select a village health volunteer.

The Mexico study tested the training program in microplanning with a group of 10 CHWs and supervisors from four different types of communities. A comparison group of CHWs with similar characteristics received no special training. The activities of the two groups were then compared by means of a questionnaire administered to the CHWs to determine whether there were any differences between the two groups in terms of how their work was planned and

carried out. The CHWs trained in microplanning were better able to develop appropriate plans for activities based on local problems than CHWs who did not receive the microplanning training. Based on the preliminary results of the microplanning activities, components of the microplanning process have been incorporated into the PHC training of physicians throughout the State of Mexico.

#### **D. Conclusions**

PRICOR-funded studies have shown that CHW training is often subject to a variety of operational problems which may adversely affect CHW performance. They have also demonstrated that operations research techniques may be used to analyze these problems, develop feasible solutions, and validate those solutions in the field. The major findings related to CHW training that were identified in this comparative analysis are summarized below.

- 1) Training content can be improved by focusing on specific problems and conditions likely to be encountered by the CHWs in their work.**

Studies in Ecuador, Mexico, the Philippines, and Papua New Guinea found that the content of training courses is often poorly matched to the activities that CHWs actually perform and the health care needs of the communities being served. PRICOR-funded researchers demonstrated that training content could be improved by matching it to a) the specific tasks that CHWs will most frequently carry out, and b) local health problems and health-related attitudes and behaviors. This can be done by involving a wider range of participants - especially community health workers themselves, CHW supervisors and community members - in the design of training content. Group decision-making techniques, such as multiple criteria utility assessment, nominal group technique, preference and interaction matrices, and Delphi technique were useful for involving different groups of people in selecting topics for CHW training. Community surveys and interviews, ethnographic studies and case studies of other projects also yielded useful information on community health needs and practices.

- 2) Competency-based and practice-oriented training approaches are more appropriate and effective for community-level health workers than traditional or formal training methods.**

Formal training approaches alone do not provide CHWs with the skills they need to perform their tasks well. PRICOR-supported researchers in Haiti, the Philippines, Uruguay, Mexico, Papua New Guinea and Ecuador found that, in many cases, CHWs trained using only formal training methods such as lectures had difficulty translating their health knowledge into practice. In many of the CHW programs studied, CHWs needed more practical experience and competency-based instruction in order to learn PHC skills and be able to apply them in the community. Successful training methods used in the studies included discussions, demonstrations, group dynamics exercises, games, role-playing and actual practice in the community.

### **3) Trainers need training in dynamic and skill-based training approaches.**

Application of more innovative and less traditional training approaches requires that trainers gain experience in these techniques. PRICOR-funded studies in Ecuador and the Philippines found that CHW trainers typically receive little or no training in how to train CHWs. As a result, trainers often resort to the techniques that were used in their own professional training, such as lectures and written examinations, when training CHWs. A feasible solution is to use mixed or interdisciplinary teams that include persons experienced in health services delivery at the community level as well as those experienced in communication or health education techniques.

### **4) CHWs benefit from community input and interaction during pre-service training.**

Locating CHW training in or near communities where they can practice their skills and which have conditions similar to those where they will work enhances training and better prepares CHWs for their tasks. Strategies tested by studies in Uruguay, Papua New Guinea, Mexico, and the Philippines showed that community interest in and support for CHW activities could be increased by involving community leaders or representatives in training activities. In the Mexico and Papua New Guinea studies, training provided CHWs with practice in community organization approaches and enhanced CHW confidence in their ability to deal with community leaders and groups. Holding training at the local level also permits training to focus directly on specific health problems relevant to the communities where CHWs will work.

## Chapter V

### SUPERVISION OF COMMUNITY HEALTH WORKERS

Four PRICOR studies dealt directly with CHW supervision (Ecuador, Nigeria/UIfe, Tanzania, Thailand/Mahidol). Another four studies touched on the subject (Mexico, Nigeria/CRCN, Peru, Brazil/JHU). Although this is a small number from which to attempt to draw generalizations, the information generated is important and some commonalities can be noted.

#### A. Rationale for Operations Research on CHW Supervision

The overriding problem addressed by supervision studies was CHW performance. PHC managers and PRICOR-funded researchers often identified poor supervision as one reason for poor CHW performance. For example, in the Nigeria/UIfe and Ecuador studies, community outreach and home visiting by CHWs was a primary task. But baseline studies showed that supervisors gave very little emphasis during their visits to reinforcing either.

In Tanzania, the most common health problems are malaria, pneumonia, measles, diarrheal diseases and malnutrition. Yet in the two study districts a baseline study showed that 69-83 percent of the CHWs did not know if there were unvaccinated children in their villages, and coverage for ORT, malaria prophylaxis and nutrition monitoring were all less than 10 percent. Supervisors were clearly not dealing with these priority problems adequately. In the Thailand/Mahidol study, researchers found that supervisors of CHWs were not always well-prepared and as a result emphasized the quantity of work accomplished rather than quality.

By improving the supervision of CHWs, managers reasoned that they would improve CHW performance. In the studies that developed and tested new approaches to supervision, this was the operational objective, and the studies did show improvements in CHW performance.

#### B. Operational Issues Related to CHW Supervision

As in other areas of CHW performance, there are a number of subproblems that make up the supervision problem. These include: defining what a supervisor should do; determining the frequency of supervision; defining the characteristics of an effective supervisor and recruiting those types of people; and finding adequate resources to carry out supervision.

The problems studied in the PRICOR-funded studies tended to concentrate in six areas, which were interrelated and which together could be described as a general problem of defining a supervision strategy. These problems are listed below, roughly in the order of frequency of occurrence in the studies.

- 1) Functions of supervision (what should supervisors do?)
- 2) Frequency of supervision (how often should CHWs be visited?)

- 3) Supervision mechanisms (what are the best means of supervising CHWs?)
- 4) Supervisory agents (who are the most effective supervisors?)
- 5) Supervision resources (what are the most critical resources?)
- 6) Preparation of supervisors (what are the desired characteristics of supervisors, and how can they be developed?)

Each of these problems will be discussed in the following pages, drawing on data from the PRICOR-supported studies and a meeting on this subject by the principal researchers at the PRICOR International Conference in June, 1986.

## 1. FUNCTIONS OF SUPERVISION

What supervisors should do was the most common problem studied. In at least one case, Nigeria/Uife, baseline studies showed that supervisors often did not know what they were supposed to do. Their role and tasks were not clearly defined. For example, 11 supervisors were asked to name five supervisory tasks. Nearly half failed to list any tasks and only one could list more than two tasks.

In other studies, supervision was either non-existent or irregular. In Peru, supervision was considered a luxury that the program could not afford. In Mexico, supervision was sporadic. Recent medical graduates doing their mandatory year of service who had no interest in CHWs provided limited supervision.

In some studies supervisors carried out a variety of functions, which varied from supervisor to supervisor and place to place. This was the case in Ecuador where some 14 different activities were identified, ranging from reviewing records to providing continuing education. The most common activities were: reviewing CHW activities and suggesting improvements; responding to immediate problems; attending patients referred by the CHW; and reviewing records.

In other studies, supervisors had a very clear idea of what they were to do: monitor CHWs and collect statistics. In Thailand, for example, supervisors perceived their role as checking on CHW performance and accelerating work activities to meet centrally-determined targets and deadlines. In fact, in a number of countries, monitoring was paramount. Supervisors spent the bulk of their time checking records and collecting statistics to forward to the Ministry of Health.

Many supervisors, managers and CHWs had opinions about what supervisors should do. High on the list was some form of in-service training or continuing education, technical assistance and guidance in the PHC tasks the health workers were to carry out. Other supervisory functions proposed included monitoring and evaluation of performance; planning and scheduling work; developing community support; problem-solving; supplying drugs and other commodities; collecting statistics and checking records; and treating patients.

Clearly, some of these functions are not supervisory functions per se (treating patients, transporting supplies, developing community support) but are functions that some supervisors can or do carry out in addition to their supervisory responsibilities, largely because they are in the area and it is convenient to do so during site visits.

The possible tasks that supervisors could carry out, therefore, go beyond supervisory tasks, and several of the researchers developed processes to set priorities among the many possibilities.

In Thailand, researchers collected recommendations from Ministry of Health administrators, district hospital directors and sub-district health officers (CHW supervisors) as to the key functions supervisors should perform. These data were analyzed and then processed through structured group meetings to arrive at a consensus of the priority functions. These were: 1) training and technical assistance; 2) guidance; 3) monitoring; 4) consultation; 5) assistance in problem-solving; 6) evaluation; 7) motivation; and 8) coordination. The researchers concluded that the mix of these functions and their relative weights would vary from district to district, depending on local needs, culture, program priorities, and other factors. They urged that specific supervision models be developed for each of Thailand's four regions and tested.

In Ecuador, the research team worked with the Ministry of Health to develop a similar list of activities, but defined the supervisor's functions as research (data collection), evaluation (assessment of performance), and on-going training of the CHW (in areas the assessment showed needed strengthening). Content included preventive activities (environmental sanitation, family gardens, etc.), curative activities, community relations and administrative activities (for example, recordkeeping).

Two studies took very different approaches to determining what supervisors should do. In Tanzania the researchers involved communities, CHWs, supervisors and program managers in setting goals for the supervision of CHWs. Ten goals were identified and then ranked in order of priority. Immunization coverage was first, followed by ORT usage and latrine construction. The remaining PHC priorities were nutrition monitoring, environmental sanitation, malaria treatment, home visiting, health education sessions, malaria prophylaxis, and safe water preparation. The research team then assisted villages in the study areas to set utilization and coverage goals for each priority activity. Supervisors were then asked to set PHC goals for the CHWs under their supervision, bearing in mind the village goals and the constraints on supervision. This process produced a set of realistic PHC objectives for supervisors and CHWs to achieve, rather than a standard list of functions. In fact, because village and CHW goals varied among villages, the supervisory functions also had to be village and CHW specific.

A similar approach was taken in Mexico where supervisors and CHWs worked with the study communities to develop work plans designed to respond to local health problems. The process began with the analysis by the CHW and the supervisor of the socio-economic and health status of the community, based on secondary data and a household census carried out by the CHW. Next, discussions were held with community members to get their perceptions of key health problems and their causes. The problems identified were then

incorporated into the planning of weekly and monthly activities for the CHW. This planning, in effect, defined the supervisor's functions, and as in Tanzania, these varied from CHW to CHW.

## 2. FREQUENCY OF SUPERVISION

How often CHWs should be supervised was another important issue that was studied. Baseline surveys showed that frequency of supervision varied from zero (Peru) to 15 contacts per year (Ecuador). The norm, however, was similar in most study areas. Contacts were irregular, with little continuity, and were highly correlated with distance and convenience. CHWs who were located near their supervisors and those who were easy to reach were contacted more frequently than those at greater distances and in less accessible areas. In Ecuador, for example, supervisors tended to be located at health subcenters, far from many of the CHWs. Those CHWs who were close to the subcenter were visited an average of once each month. But over half of the CHWs, largely those who lived further away, reported that the supervisor visited them on only a few occasions. In Thailand, supervision was irregular and tied to specific activities, such as preparing a village for a special PHC campaign. When no special activity was underway, supervisory visits declined dramatically. The Nigeria/UIfe study found that supervisors made an average of one one-hour visit per month to CHWs, but the majority of health workers were not visited more than once each year.

The baseline data in several studies also showed that frequency of contact made a difference in CHW performance. In the Ecuador study, regression coefficients showed positive associations between the number of monthly contacts and CHW productivity. Also, the fewer the number of CHWs that the supervisor supervised, the more frequent the supervisory contact.

The research team in Ecuador did a thorough analysis of the existing supervision system and designed a more cost-effective model that set monthly supervisory contacts of four hours each as the norm. As the number of contacts and the supervisor's familiarity with the supervision process increased, it was expected that the duration of contact could be reduced. The supervisor was assigned from one to four CHWs to supervise.

Baseline data in the Nigeria/UIfe study also showed a strong relationship between frequency and duration of supervision and CHW performance. The research team used home visiting as the primary measure of CHW performance, reasoning that to be effective, CHWs had to get out in the community. Also, the PHC program plan called for CHWs to spend at least 60 percent of their time on community outreach activities. The data demonstrated that longer and more frequent supervisory visits were correlated with greater numbers of home visits. CHWs who received six supervisory visits per year covered only 10 percent of their assigned households, while those visited 39 times annually covered 22 percent of their households. Duration of visits was shown to be slightly more important than frequency. CHWs whose supervisor's visits lasted 41 minutes covered 8 percent of households; those whose visits lasted 68 minutes covered 27 percent of households.

In the Nigeria/CRCN study, interviews with former CHWs showed that those who had met monthly with the village health committee (their supervisors) had

stayed on the job longer, an average of 3 years. Those who met with their committee less often or never averaged only one year on the job.

### 3. SUPERVISION MECHANISMS

All projects concluded that the personal visit was the most effective and desirable supervisory mechanism. However, because the costs of personal visits are often a major constraint, several alternatives were identified and tasted.

In Tanzania, a "team safari" approach to supervision proved to be effective. The team is made up of the village health committee, the CHW, the supervisor, local teachers, and agriculture and water development workers. They visit every house in a village on a regular basis. This not only serves as a way to monitor the CHWs' work, but to alert them to health issues, provide guidance and instruction, and identify cases needing follow-up. After the visits the team makes a list of all cases requiring follow-up by the CHW. The CHW reports on follow-up activities to the supervisor who reports in turn to the village health committee.

In the Thailand/Mahidol study, the research team concluded that communications media of all kinds should be employed to complement personal visits. Continuing education, in particular, could be enhanced by preparing a series of cassette tapes on various PHC subjects. The tapes could be circulated among the CHWs and questions answered during regular supervision meetings.

A study in Peru demonstrated the value of computerized PHC protocols for supervision of CHWs. In a pilot study, ten CHWs were equipped with a lap-top computer and trained to use its interactive software in carrying out selected PHC tasks. The core software package consisted of modules for: household census, visit registration, routine child visit (immunization and growth monitoring), and diarrhea diagnosis and treatment. Initial training lasted 4-7 days, after which the CHWs were able to operate the computer and conduct an ongoing census. Supervisors, during visits to the CHWs, introduced the CHWs to the other modules, each of which required 2-4 hours of training. The computer facilitates supervision in several ways. First, the health workers follow a prescribed protocol, thus reducing errors in diagnosis, education, treatment and record-keeping. Second, the protocols prompt the CHWs in the steps to carry out key tasks, and reduce reliance on the supervisor to guide the CHW. Third, because the data collected are stored in the computer, the supervisor can rapidly assess: a) what the CHW has done; and b) how well it has been done. And finally, the computer and software have become status symbols, enhancing the CHWs' prestige in the study communities.

A study in Jamaica demonstrated the value of management science techniques for supervision. Researchers observed 496 randomly selected workers representative of the various type of staff working in health centers throughout Jamaica. The data showed the non-productive time of health workers ranged from 26-66 percent. Productivity varied widely, from 30 to 150 percent on a specially designed index. A cost index also showed wide variations, from 20-46 percent. These data all indicated that there was room for significant improvements in health worker productivity and efficiency. A model was developed that showed how to improve productivity through reallocation of personnel and rescheduling of clinic services.

Most projects also identified the need for supervision aids, including checklists, guidelines and protocols. In Ecuador, a protocol was developed to guide auxiliary nurses during supervisory visits. Checklists were also prepared to help supervisors monitor priority PHC activities, and routing charts were developed to help supervisors plan their supervisory schedules and routes. Researchers in the Mexico study developed formats that supervisors could use as guides in developing weekly and monthly work plans with CHWs.

In Tanzania, supervision schedules were developed along with formats for preparing monthly work plans and activity reports. A supervision checklist was also developed. The Nigeria/Uife study team developed a set of simple supervisory protocols that were designed to help supervisors identify ways to improve CHW performance. Each protocol contained a planning page that the supervisor completed prior to the visit, a rating page that the supervisor used to rate the CHW's performance on a list of PHC activities, and a follow-up page that listed follow-up activities that the supervisor would take. Specialized protocols were also developed for ORT, family planning, growth monitoring, and immunizations. The supervisors filled out the general protocol and one of the specialized protocols on each visit.

#### 4. SUPERVISORY AGENTS

Traditionally, supervisors have been health professionals from the Ministry. In Thailand, the CHW supervisor is the subdistrict health officer, midwife or sanitarian. In Nigeria, supervisors can be medical officers, community health officers, health superintendents, public health nurses or midwives. In Ecuador the supervisor was either a young physician fulfilling a year of government service or a nurse. In almost all of these cases the supervisor had no specialized training in supervision. Most had clinical duties and supervision of CHWs was viewed as just another activity. Thus, some health personnel, particularly those who were very clinically oriented (physicians, for example) neither were interested in nor undertook supervision. In at least one case, Thailand, where there are supervision specialists, this post is considered a "graveyard" for senior medical officers nearing the end of their careers.

It became clear to the Thailand/Mahidol research team that supervision could not be left entirely to the health officers. They had neither the time nor adequate transportation to reach all CHWs as frequently as desired. The researchers concluded that community supervision was a viable complement and recommended that CHW supervision be the function of two principal agents: community leaders, who would be responsible for administrative supervision, and subdistrict health officers, who would be responsible for technical supervision. Supplementary support would come from district and provincial health officers.

In Ecuador a systematic analysis of the supervision system showed that the best agent was the auxiliary nurse, who was geographically closer to the CHWs, more interested and skilled in supervision, and more effective than the physicians, who were the formally designated supervisors. Auxiliary nurses are also less costly supervisors, both in terms of salary and allowances and transportation costs. Another agent that proved to be important was the community, represented by members of formal (e.g., associations, cooperatives) and informal (elders' "councils") organizations. These groups were charged with evaluating and coordinating CHW activities.

In the Nigeria/CRCN study, village health committees were the principal supervisors of CHWs in remote areas.

## 5. RESOURCES FOR SUPERVISION

Probably no other problem was identified as frequently as the lack of resources for supervision. Inadequate transportation was identified in most studies as one of the major constraints. Lack of vehicles and limited allowances for petrol, fares and per diem were the principal concerns. The Nigeria/UIife study found, for example, most of the supervisors had to use their personal cars to make visits to CHWs. Official cars and transportation allowances were not available to them for this function. In Thailand, subdistrict health officers rarely can afford an automobile and thus either have to ride a bus, walk, or use their own bicycle or motorcycle, if they happen to have one.

Some projects succeeded in generating increased support for supervision by demonstrating its importance to the success of PHC. For example, in Tanzania, the budget for CHW supervision was increased. That was used to increase the number of supervisors, the frequency of supervision, and to purchase bicycles for supervisors.

Other projects identified ways to conduct supervision more efficiently. The Ecuador researchers carefully analyzed maps, transport fares, costs of supervisory visits and developed efficient supervisory routes that minimized travel time.

There were projects that accepted the limited resources as a constraint and worked around it. The Nigeria/UIife study developed strategies for improving supervision that were feasible (increased training, development of tools) and ignored those that were not (increased monetary incentives, transportation for supervisors, increased number of supervisors).

## 6. TRAINING AND PREPARATION OF SUPERVISORS

Baseline data on supervisor characteristics collected in Ecuador showed that there was no particular correlation between level of education and effective supervision. In fact, supervisors with higher levels of education seemed to have less supervisory knowledge and reviewed CHW activities less frequently than those with less education. However, more extensive training in supervision was shown to have a strong association with increased supervisory contacts.

As part of the research project, a workshop in supervision was developed and tested in Ecuador. The workshop lasted four days and covered an overview of the research project and its findings, analysis and adaptation of supervision tools that were developed, presentation and discussion of the new approach to supervision, practice in using the supervision forms and manual, and refinement of the supervision route charts. A key to the success of the workshop and subsequent implementation of the supervision strategy, was the participation of supervisors, CHWs as well as representatives of community organizations in the training.

Most studies found that few supervisors had received any training in supervision. And most recommended that training be provided. For example, the Nigeria/Uife project recommended to both the Federal and State Ministries of Health that pre-service and in-service training programs in supervision be established. The researchers also recommended that, at least one faculty member of each training center be trained in supervision and management.

### C. Evaluation and Results

The supervision model tested in Ecuador consisted of the auxiliary nurse as the primary supervisor of one to four CHWs, making a monthly visit of four hours following a predetermined route and schedule, and using a protocol and checklists to monitor CHW activities. The new model was tested in two provinces consisting of 29 CHWs and 15 supervisors. There were also two control provinces with 27 CHWs and 10 supervisors. The field test lasted five months.

Post-test results showed significant differences in supervision and CHW performance between the experimental and control provinces. The average number of supervisory visits was almost double in the test provinces, hours of contact with the CHW were triple, meetings with community leaders were four times greater, and joint home visits with CHWs to pregnant women were over three times greater. Supervisors in the experimental provinces went over activities with the CHW more often than those in the control provinces; gave better support in both preventive and curative care; provided more supervisory services; and were more satisfied with their jobs.

Additionally, the average monthly cost of supervision was about half as much in the experimental (US \$2.20) as in the control provinces (US \$4.78), despite the much higher frequency of contact.

CHWs in the experimental provinces clearly outperformed those in the control provinces. Identification and monitoring of pregnant women, and monitoring of postpartum women, infants and children was almost twice as frequent. CHWs showed higher output for first aid, health education talks, diarrhea and respiratory infection control, latrine construction, and a variety of other PHC activities.

For the Tanzania study, no data are available on CHW performance, but it is clear that significant changes have occurred in the supervision system. The number of supervisors assigned to the project area doubled, the number of supervisory visits increased to at least two per month, supervision schedules, work plans and reports have been developed, a supervisory checklist is being used, and village health committees are now actively involved in supervision.

### D. Conclusions

The findings from these PRICOR-funded studies complement recent findings from supervision studies in a closely-related service field, family planning. A report on lessons learned from operations research concludes that supervision is critical to effective program performance.

Adequate supervision is one of the most important elements in the success of a family planning program...[A major international analysis by Mauldin and Lapham says that] 'An adequate system of supervision at all levels' was one of the three most important program elements, along with 'family planning staff carries out assigned tasks' and the 'availability and accessibility of fertility control methods.' (Population Reports, p. J-826)

In another report by Finkle and Ness, the authors conclude that:

There is probably no more common comment in the family planning literature than the observation of the relation between supervision and program effectiveness...Effective programs have good supervision of the field staff. Field workers are visited frequently, given good technical assistance and helped to solve their local problems. Weak programs are commonly found to have weak, ineffective, or non-existent supervision. Field workers are visited infrequently by supervisors who simply check up on their work and delivery payments, or more often they are simply not visited in the field at all. (p. 60)

Although it may be imprudent to draw generalizations from these few examples, the PRICOR findings combined with those from family planning point to several important lessons that emerge.

#### 1) Supervisor functions.

If any conclusion could be drawn from these limited examples as to what supervisors should do, it would be that no standardized set of functions can or should be developed for supervisors. Rather, functions and their relative emphases should be developed from an analysis of what an individual supervisor needs to do to ensure that a program plan is carried out effectively and efficiently. This approach was taken in such diverse settings as Tanzania, Nigeria and Mexico. The broad supervisory functions outlined in the Ecuador study, consisting of research (data collection), evaluation (assessment of CHW performance), and on-going training constitute a particularly attractive framework that is comprehensive and flexible. Flexibility is important, because what the supervisor needs to do to improve CHW effectiveness is going to vary from place to place. In some cases the supervisor may need to put a great deal of emphasis on in-service training to bring a CHW's skills up to a required level; in another case it may mean working with the CHW to develop and monitor a reasonable work plan; and in other cases it may mean helping the CHW develop solutions to problems that arise in carrying out a plan.

The style of supervision is also important. Many supervision systems are authoritarian rather than supportive. Finkle and Ness conclude from their review that

The single most common formulation argues that an "authoritarian" style of management is responsible for program weakness or failure. Almost as common is the observation that program success or achievements can be attributed to a non-authoritarian style of management.

[In effective programs] Supervising is seen as a task in which both supervisor and subordinate share in the problems and seek ways to solve problems and to enhance program performance. Authoritarian managers, on the other hand, see their tasks as primarily disciplining workers, who are perceived to be lazy and untrustworthy. Thus, they feel they must constantly check up on their workers, find their faults and call these to attention to be rectified. (p. 54)

These same conclusions emerge from the PRICOR-funded studies, where the projects were critical of supervision systems that emphasized record-keeping and evaluation of CHWs. Several of the studies produced approaches that defined the supervisory function in supportive terms, stressing continued education, problem-solving, guidance and technical assistance.

## 2) Frequency of supervision.

It is clear from the PRICOR findings that the more frequent the supervision, the better CHWs perform, and the longer the duration of a supervision visit, the better the performance.

This finding is confirmed by similar data from family planning studies that shows a positive correlation between frequency of supervision and CHW knowledge, skills, and performance. (Population Reports, p. J-827) Finkle and Ness also conclude that "there is strong evidence that the frequency of supervision is positively associated with effective program performance." (p. 62) They believe that from one to two field visits per month is about right.

However, studies in Brazil and Colombia showed that reducing supervisory visits from monthly to quarterly had no noticeable effect on performance because the monthly visits had emphasized routine clerical business. (Population Reports, *ibid*) This leads to a caveat: the content of the supervision is as important as the frequency, or as Finkle and Ness put it, "the quality, as well as the frequency of supervision...has an impact on program performance." (p. 63) When supervision is supportive, it has an impact; when it is authoritarian or clerical, frequency of supervision is not particularly significant.

## 3) Community involvement in supervision.

Another important lesson that emerges from PRICOR-funded studies is that community involvement in supervision is not only possible, but in many cases desirable. Community involvement was advocated in Thailand, Nigeria, and Ecuador. Community participation is essential to effective PHC programs, and participation in supervision of CHWs is one way to involve communities in the program.

## 4) Supervisory agents.

Although medical personnel have traditionally been the main supervisors of CHWs, the PRICOR-funded studies showed that there are other viable options. Lower level health personnel (auxiliary nurses) can be effective supervisors. Community leaders and committees can carry out supervision, especially in non-technical areas. Group supervision as tested in Tanzania and Thailand can

be effective. Group supervision was compared with individual supervision in a study in Kenya, and no significant differences were found between the groups, either in CHW knowledge or performance. (Population Reports, p. J-827)

#### 5) Characteristics of effective supervisors.

A common question that is asked by program managers and donors is "what are the characteristics of effective supervisors? What age range, what sex, what level of education is best?" PRICOR-supported studies suggest that there are no standardized characteristics of effective supervisors. The Ecuador study found no correlation between education and performance, for example. Some projects used males, others females.

The family planning literature corroborates this. The Population Reports issue concludes that

program experience suggests that the individual character and abilities of each supervisor are more important to effective supervision than any generalizable characteristic, such as whether they are male or female, what position they hold, or how they have been trained. (p. J-826)

Finkle and Ness conclude that "Personal characteristics show no consistent relationship with performance," although they "did find some consensus that medical doctors tend to be ineffective supervisors." (p. 61) That was also a finding in the PRICOR-funded Ecuador study.

#### 6) Tools and other resources for supervision.

Checklists, protocols, guidelines, manuals, and routing schedules were developed by various PRICOR-funded projects. All seem needed and useful. Computerized protocols may also be very useful in near future, not only as a supervision tool, but as a diagnostic, prescriptive, and record-keeping tool, as well. The computerized PHC protocols developed and tested in Peru appear to hold promise in this regard. In Kenya, inexpensive microcomputers are being used to provide CHWs with rapid feedback on their performance. (Population Reports, p. J-827)

#### 7) Training.

Training in supervision techniques is clearly needed. Most studies found that supervisors were not trained in supervision, and clearly needed it. The Ecuador study developed and tested a four-day workshop that was situation specific. The Nigeria/UIfe study recommended both pre-service and in-service training in supervision.

#### 8) Costs.

Another lesson is that improved supervision does not necessarily have to cost more. The Ecuador study is a case in point. The new system, which provided almost twice as much supervision as the old system, cost half as much. Data from a PRICOR-funded study in Brazil showed that the cost of supervision was only 1.2 percent of the total costs of the health posts. A study in Kenya showed that group supervision cost about half as much as individual

supervision and it permitted supervisors to cover two to three times as many CHWs. (Population Reports, p. J-827)

#### 9) Research.

A further lesson is that Ministries of Health can and will act upon reasonable research findings, especially, if: 1) the research is directed toward a significant problem the Ministry has defined; 2) the key decision-makers in the Ministry are involved throughout the research; and 3) the results are conclusive. This was the case in Ecuador, where the supervision model developed by the research team has been incorporated into the Ministry's norms and supervision guidelines. It was also the case in Tanzania, where early involvement of Ministry decision-makers led to immediate implementation of changes in the CHW supervision process.

Finkle and Ness concluded that operations research is particularly suited to the needs and interests of program managers and is an effective way to improve program performance. They advocate explicit training in the problem analysis/solution development/solution validation approach to operations research not only for all levels of managers, but for supervisors as well. (p. 51)

#### Bibliography

Finkle, Jason L. and Gayl D. Ness. Managing Delivery Systems: Identifying Leverage Points for Improving Family Planning Program Performance. Department of Population Planning and International Health, University of Michigan, December 28, 1985.

Population Reports: Family Planning Programs. "Operations Research: Lessons for Policy and Programs." Volume XIV, Number 2; Series J, Number 31, May-June, 1986.

## Chapter VI

### COMMUNITY HEALTH WORKER INCENTIVES

Five PRICOR-funded studies developed new strategies for paying community health workers to reduce high CHW attrition. In addition, another 12 studies examined types and the appropriateness of incentives to motivate CHW recruitment, retention and performance, as well as means to generate incentives. While the PRICOR-funded studies did not attempt to make a comprehensive review of the effectiveness and appropriateness of different types of CHW incentives, the findings of these studies do provide insight into the importance and usefulness of a broad range of material and non-material incentives.

#### A. Rationale for Operations Research on Incentives

A limiting factor for efforts to extend PHC coverage, particularly in rural areas, has been high or rapid turnover of CHWs. This attrition has been the result of numerous factors, including dissatisfaction with low or irregularly paid salaries, lack of advancement opportunities, and low community acceptance or recognition of CHW activities. PHC program managers have tended to make higher demands on CHWs as more services are offered in response to rising public expectations. Yet in most cases, little attention has been given to the need for incentives to maintain CHWs in their positions or to reward CHWs for taking on additional tasks and coverage responsibilities.

The provision of incentives to CHWs has various objectives beyond solely the question of remuneration. Recruitment incentives may be needed to attract qualified candidates willing to perform CHW tasks for low salaries. Improving job satisfaction may be essential for retaining low-paid CHWs in underserved communities. As CHWs are asked to provide an increasingly broader range of services, the need for incentives to motivate the provision of specific priority interventions or improve overall performance has become more relevant. Motivation to carry out specific PHC tasks becomes especially important when CHWs are volunteers who do not receive specific remuneration for their PHC activities.

#### B. Operational Issues Related to Incentives

A number of smaller operational problems or issues make up the overall problem of providing incentives. A predominant issue is the selection of incentives appropriate to the specific effects or behaviors to be motivated. Certain kinds of incentives are more effective for motivating some behaviors or activities than others. A second major problem area is establishing mechanisms for providing incentives and identifying sources of remuneration and support for CHWs. Ensuring the continuity or regularity of incentives is related to the development of viable mechanisms for providing incentives but often has received little emphasis.

PRICOR findings are concentrated in the first two areas. In this chapter, data and information from PRICOR-funded studies will be presented in the

following problem areas:

1) Types of incentives that are most appropriate for motivating certain kinds of CHW behaviors and activities. In particular, findings will be presented relating to both material and non-material incentives for becoming CHWs or taking on CHW tasks, increasing CHW stability and reducing attrition, and improving CHW performance or motivating CHWs to perform specific tasks.

2) Mechanisms for generating CHW incentives.

Within these areas, findings from the studies concerning factors that motivate CHWs will be summarized. In cases where approaches were identified or tested, these will be described and conclusions drawn as to their effectiveness. Studies also examined specific mechanisms for generating and maintaining these incentives, often with participation from the community. While the focus of this section is on problems and issues relevant to the provision of incentives to improve CHW programs, a related area is community support for other aspects of CHW programs. Readers who are specifically interested in community financing of CHW programs are referred to Community Financing of Primary Health Care: the PRICOR Experience, by Stinson, Pipp, Seims and Sayer.

#### 1. TYPES OF INCENTIVES TO MOTIVATE SPECIFIC CHW BEHAVIORS

PRICOR-funded researchers identified a number of incentives for recruiting, retaining and motivating CHWs. These incentives can take many different forms, depending on local situations and the specific behaviors to be motivated. In general, motivating factors may be divided into two kinds: uncontrollable factors related to intrinsic social characteristics and cultural values that encourage individuals to perform PHC tasks, and controllable factors, incentives that may be implemented to improve the attractiveness of the CHW role.

Controllable factors provide options that PHC program managers may consider under appropriate circumstances to motivate CHWs or the performance of specific PHC tasks. Uncontrollable factors may also be important if they facilitate CHW recruitment or retention. While the latter cannot be changed by decisionmakers in the short or medium term, they can enhance the job satisfaction of CHWs and should be taken into account.

##### a. Incentives for Recruitment of CHWs

Several studies examined ways to encourage individuals to become CHWs or to take on some limited PHC tasks, often as a result of problems with recruitment of qualified CHWs. For example, in India, the more educated candidates were uninterested in being community health workers due to the low salaries offered for the position. In Bolivia, attempts to expand PHC services through the recruitment of volunteers were unsuccessful because community members had limited time to dedicate to PHC activities. In such cases, incentives were needed to motivate people to carry out PHC tasks. Specific incentives studied by PRICOR-supported researchers are discussed below.

## Uncontrollable Factors that Facilitate CHW Recruitment

Existing social and cultural factors that enhance the perceived value or prestige of PHC tasks were identified as powerful motivators for CHW recruitment by several studies. In the cooperatives examined by the India study, members of the lowest castes were eager to serve as CHWs because of the high social status afforded to the health worker, despite the low salaries offered. Project staff emphasized the recruitment of CHW candidates with strong personal commitment and dedication who would work without regular compensation and benefits. Social values that encourage volunteerism or community service also facilitate the recruitment of CHWs. In Thailand and the Philippines, researchers found that social pressure to do community service encouraged individuals to become health volunteers.

Identifying individuals whose own social roles motivate them to do health work can be an effective strategy for CHW recruitment. Three studies recruited community members to provide new PHC services in underserved communities by adapting traditional roles to include preventive and health education activities. In the Haiti/AOPS study, the lack of paid CHWs was a barrier for the delivery of ORT. The researchers identified community groups who could be persuaded to integrate ORT promotion into their normal activities, including community and church leaders, traditional birth attendants, teachers, and market sellers. In rural Liberia, adolescents, who frequently are responsible for caring for younger siblings, were identified as natural health promoters who could be motivated to perform health education activities that related to their normal household duties. Sixth graders trained by the Liberia/CUC study were able to master the health modules introduced into their curriculum. The students demonstrated that they were effective communicators of health information to their families and friends.

The Brazil/UVA study trained traditional healers to provide ORT as part of their healing ritual for children suffering from diarrhea and dehydration. The healers, who are widely respected in their communities and who are frequently the first source of care sought by rural mothers, receive no monetary incentives for their work, but rather consider their healing powers as God-given to be used to serve the community. During the 12-month intervention period of the Brazil study, the healers proved to be both competent and dependable frontline providers of ORT.

However, while social and cultural factors may enhance the acceptability of the CHW role, they may also discourage people from becoming CHWs. In Nigeria and Bolivia, the low status given to the preventive and promotive tasks acted as a disincentive for CHW recruitment that had to be countered by incentives.

## Controllable Factors that Facilitate CHW Recruitment

Material incentives in the form of salaries or other regular compensation were required in some projects to attract qualified candidates to CHW positions. In the Philippines, Liberia and Nigeria, community members said they could not work as CHWs without some form of compensation, since PHC work took time away from income-generating activities. In the Brazil/JHU study, the high salary offered by FSESP, relative to other employment opportunities for young women in rural Brazil, was found to be a strong motivating factor for the recruitment of highly qualified candidates, since large numbers of women

sought the CHW position. In both the Brazil/JHU and India studies, job security and the regular payment of salaries were also identified as contributors to the attractiveness of the CHW position, even in the case as in India where CHW salaries were fairly low.

Training in certain PHC skills that commanded community respect was used in some studies as a recruitment incentive. Traditional birth attendants in Haiti could be recruited to educate mothers and assist with ORT promotion activities in the community because they received increased respect due to their newly acquired ORT knowledge. The Uruguay study successfully recruited residents to serve as volunteer health promoters in urban neighborhoods of Montevideo. The investigators reported that the residents who were recruited were motivated by a personal dedication to community service and by the training they would receive in health and community organization skills.

#### b. Incentives to Increase CHW Stability

The major incentives problem examined by PRICOR-funded researchers was how to reduce CHW attrition and increase the stability of CHWs. High turnover among CHWs was identified as a key obstacle to extending PHC services in Nigeria, the Philippines, Swaziland, Liberia, Ecuador, Thailand, and Bolivia.

#### Uncontrollable Factors that Encourage CHW Stability

Public acceptance and recognition of the value of the CHW's activities was identified as an important contributor to CHW job satisfaction and stability in India, Nigeria, and Bolivia.

In the eight community health projects examined in India, turnover was found to be exceptionally low, even though salaries were minimal. Project staff reported that the increased respect and the leadership opportunities given to members of lower castes for their work as CHWs accounted for the low attrition. In four of the eight projects, the honor of serving the community was perceived by project staff to be the major incentive for CHWs.

The Nigeria/CRCN study sought to find out why so many village health workers had left their posts. Through interviews with village health committees and active and inactive CHWs and from case studies of other CHW programs, the researchers identified one of the main causes of poor job satisfaction to be lack of utilization of the CHWs by the community, which wanted higher level health workers who could provide a broader range of services. Attrition of CHWs in Bolivia was also linked to low morale resulting from the lack of acceptance and support from community members for the preventive tasks that the CHWs primarily performed. It was recommended in those studies that as part of an approach to increasing CHW job satisfaction, CHWs be given additional tasks that the community valued which would lend prestige to their role and increase utilization.

#### Controllable Factors that Increase CHW Stability

Findings from nine PRICOR-funded studies identified material and non-material incentives that could be instituted to increase CHW stability. The incentive most commonly recommended by the studies to increase CHW stability was money or other material remuneration, particularly when CHWs were full-time or

assigned numerous tasks. In many cases, a combination of incentives was used to improve CHW job satisfaction.

The Brazil/JHU study concluded that in addition to the relatively high salaries and job security of employment by a quasi-governmental institution, the regularity of payment was perhaps more important than the amount of the salary in motivating the FSESP visitadoras. The low attrition reported for these CHWs was attributed to the fact that salaries were paid monthly, were not dependent upon local availability of funds (such as municipal budgets) and were adjusted twice a year by law to reflect inflation. Moreover, long-term service in FSESP was also rewarded through salary differentials based on length of employment.

Researchers in the Nigeria/CRCN study identified a number of determinants of CHW turnover that could potentially be modified. These included low salaries, lack of supervision, CHW characteristics, the short period of training, and no advancement opportunity. Case studies showed that CHW programs with regular supervision had lower attrition rates. CHW characteristics associated with CHW stability identified by the researchers were age (between 25-40 years), sex (male), and educational level (less than primary education). The Nigeria researchers found that the more experienced and well educated CHWs often sought additional training and better employment opportunities elsewhere as higher level health workers, leading them to conclude that CHW stability may be enhanced by placing an upper limit on educational level in future recruitment of CHWs. Although the research indicated that higher salaries would improve CHW stability, the private voluntary organization that employed them could not afford to pay the CHWs more. The researchers determined that additional training might be used as a non-material incentive to curtail high CHW turnover. The strategy implemented to increase CHW stability was to offer CHWs the possibility of additional training and promotion to a higher level health worker after two to three years of service.

Although most of the programs studied reported that CHW selection criteria included community residence, partly in the expectation that a CHW from the community would remain in service longer as well as be more effective, no consistent correlations were found between the sex, age or marital status of the CHW and length of service. The perceived relationship between specific CHW characteristics and attrition seemed to depend on socio-cultural factors that varied between countries.

In Swaziland, the irregular payment of the small monthly stipend to rural health motivators by the Ministry of Health (MOH) has had a demoralizing effect on these CHWs and threatens the long-term sustainability of the program. The solution developed by the Swaziland researchers to provide incentives to the CHWs was to institute a scheme by which the community would donate communal land and agricultural labor towards the production of a crop that could be given to the CHWs. Because community members had expressed dissatisfaction with the limited preventive services being offered by the CHWs, the solution also sought to improve the scope and quality of CHW services through in-service training in ORT, growth monitoring and immunizations. Implementation of the scheme involved extensive discussions with community leaders about the role of CHWs and community support for CHWs. While the scheme was only partially successful in generating community labor, the process did contribute to improving CHWs' overall job satisfaction. CHWs

reported that since their training they felt that the community has appreciated their work more and that there has been a better community response to their educational efforts, particularly with regard to children's health. The final evaluation also showed that CHWs have increased the number of priority services, such as immunization referrals, and the knowledge of mothers in regard to health interventions such as ORT has improved.

High turnover among CHWs is one of the factors limiting PHC coverage in rural Bolivia. In Carrasco Province, active and former health workers identified inadequate and unstable salaries and lack of support from private voluntary organizations and the Ministry of Health as the major reasons for dissatisfaction and high drop-out. PRICOR-supported researchers working with private voluntary organizations and communities developed a scheme to extend coverage of services with co-financing from the community. Because the communities said they would be willing to support a CHW only if that person were from the community, a member of the community was selected to become a new, lower level type of health worker who was trained to provide health promotion and basic curative services. Each community agreed to contribute wheat and potatoes that could be consumed by the CHWs or sold for cash.

The problem of attrition among volunteer CHWs was examined by three PRICOR-funded studies. In one of the communities (barangays) in the Philippines/Visayas study, seven out of 10 barangay health workers left their positions within a few months of initial training because they said they had to get back to making a living and could not give time to health activities on a regular basis. In another PRICOR-funded study in the Philippines, by ten months after training, 20% of the CHWs had dropped out of the program and found paid employment. In Ecuador, lack of support from the MOH and the failure of revolving drug funds to generate surpluses has caused high attrition among rural health promoters. These studies concluded that some mechanism for consistently rewarding PHC activities was probably necessary if stability were to be maintained among these volunteers.

In Korea, a study to train community leaders to serve as volunteer health educators was unsuccessful and suggests that training alone is not a sufficient motivator to sustain the activities of volunteers. Although the leaders reported that they found the training to be "meaningful and valuable", they lost interest in the health promotion activities because their role was not recognized by the community.

High attrition was also reported among community health volunteers in Thailand. Volunteer drop-out was attributed to their lack of awareness of the importance of the preventive and promotive activities assigned to the volunteers and to the lack of close supervision and support from subdistrict health personnel. The Thailand/Mahidol study developed feasible and affordable alternatives for supervising the volunteers to reduce their turnover rate and to increase their contribution to the national PHC program. The Philippines/UPCN study also concluded that improved supervision and monitoring of volunteer barangay health workers were needed to sustain their interest and motivation.

### c. Performance Incentives

While the need for incentives to reduce CHW attrition has been acknowledged as

a major problem, PHC programs have tended to place less emphasis on the use of incentives to motivate better performance by CHWs who stay on the job. A small number of PRICOR-funded studies examined how incentives may be used to improve CHW performance or to motivate CHWs to place more emphasis on specific tasks, such as preventive services. Most of the factors motivating performance that PRICOR-funded studies examined represented controllable factors that could be implemented by decisionmakers. In some cases, such incentives were complemented by uncontrollable factors that also facilitated CHW effectiveness.

In Thailand, CHWs readily took on the additional task of managing revolving drug funds because of both non-material and material incentives. The position of drug fund manager was highly respected both because of the value placed on the availability of drugs and because community service was considered a social obligation. In addition, most drug fund managers received some form of cash payment, often as a percentage of profits. However, CHWs were less willing to dedicate time to management of sanitation and nutrition funds because they were often less profitable than drug funds and could not be easily structured to provide cash incentives. This suggests that while the status of fund manager and social sanctions for community service may have led CHWs to assume fund management tasks, material incentives were required to ensure their effective performance as fund managers.

A PRICOR-supported project in Haiti implemented a scheme of performance-related incentives for CHWs to improve the effective delivery of child survival services. Funds to pay for CHW incentives were generated by the sale of health cards that gave mothers with malnourished children access to credit at low interest rates through an innovative multi-purpose credit program. Mothers could become eligible for the program by demonstrating competence in ORT, immunization, growth monitoring and family planning, by having their children up-to-date in vaccination schedule, and by participating regularly in growth-monitoring sessions. CHWs were remunerated based on the number of mothers assigned to them who acquired the requisite child survival knowledge and skills. In addition, if mothers did not feel that their CHW was doing an adequate job of teaching the child survival skills, they could request a replacement.

In Senegal, investigators felt that former volunteer CHWs functioning as traditional birth attendants performed better after being given a salary. The Haiti/CS study used monetary incentives to successfully modify the role of TBAs from that of making home deliveries to one of referral of pregnant mothers for pre-natal care and hospital deliveries. When payments were made to traditional birth attendants for referrals as well as home deliveries, the number of hospital deliveries increased, an outcome desired by health officials.

Another alternative for improving CHW performance used by PRICOR-supported studies was adding new skills that have prestige or that enhance CHW job satisfaction. To help improve the effectiveness of CHW activities, the Mexico study introduced a microplanning process whereby both the CHW and members of her community became active participants in planning and setting priorities for CHW tasks. The group of health workers trained in the microplanning process showed great enthusiasm for their new role in planning their activities, an area where previously they were given little opportunity to

participate. An evaluation three months after implementation of the microplanning process showed that the experimental group had greater knowledge of their community and were better able to diagnose its health problems than were the control group of CHWs. The CHWs who participated in planning their work also succeeded in involving to a greater extent the community in health activities by identifying and training community volunteers to assist in health promotion activities.

CHW status and job satisfaction were increased in a highland jungle area in Peru when solar-powered microcomputers were introduced to aid CHWs by guiding them in their patient contacts and in maintaining records on the families assigned to the CHW. The researchers reported that since the introduction of the microcomputers, the CHWs' self-image and community support for the computer-assisted health worker have increased. The quality of services provided by the CHWs has also reportedly improved due to the microcomputer, which prompts the health worker to obtain information from the patient and indicates what action should be taken based on the information.

Findings from two studies support the motivating influence of supervision on volunteer health worker performance. In the Philippines/Visayas project, although volunteer attrition remained a problem in all the communities studied, significantly more activities were carried out by volunteers in those barangays where local officials and health care personnel closely supervised and took an active interest in the volunteers. Similarly, the Philippines/IPH study identified support by the local midwife and the community as an important determinant of the success or failure of nutrition activities of barangay health workers after receiving additional training.

## 2. MECHANISMS FOR PROVIDING CHW INCENTIVES

Mechanisms for providing monetary or other materials incentives to CHWs were developed and tested by PRICOR-supported researchers in Benin, Haiti, Swaziland, Bolivia, and Liberia. In addition, studies in Ecuador, Nigeria, and Thailand reported on experiences with financing CHW incentives. Schemes examined to finance CHW activities relied on fee-for-service, revolving funds, credit schemes and in-kind contributions of land, crops and labor.

Fee-for-service mechanisms were used successfully in Benin to partially cover the cost of CHW salaries. The success of the financing scheme depended on setting affordable fees for services that community members were willing to pay for. Fees were charged for curative services but not for preventive activities which community members were not willing to pay for. The higher fees charged to patients from outside the community also contributed significantly to the program's income. Although 60-80% of the operating costs of the PHC program were recovered through user fees, the researchers concluded that 100% cost recovery was not possible if fees were to be affordable.

A PRICOR-supported study in Haiti demonstrated that financing mechanisms can be used to promote multiple PHC objectives, including CHW incentives. Fees collected for curative services in Haiti were used to pay CHWs but were found to be insufficient to cover all the costs of preventive services. As was described earlier, researchers in the Haiti/AEDC study developed an innovative scheme to help pay for CHW salaries by selling health cards that gave eligible

mothers access to low-interest credit. The credit scheme included a health promotion component by requiring that mothers demonstrate competence in child survival areas to become eligible for purchasing a health card. A performance incentive was also built into the scheme by varying CHW payments according to the performance of the mothers to whom the CHW was assigned to provide health education.

In three studies where user fees were considered infeasible because the community was unwilling to pay for the services provided by CHWs or unable to make cash contributions, schemes to collect in-kind payments of food, cash crops and labor were introduced with varying degrees of success.

Researchers from the University of Swaziland proposed the development of a community financing scheme to support the CHWs because problems were encountered with the regular payment of their government stipend. The research revealed, however, that communities were not willing to support the limited preventive services offered by the CHWs and that the MOH would not permit the CHWs to carry out more curative tasks. A compromise solution implemented in one chieftainship was to upgrade the quality of PHC services provided by the CHWs through additional training. The traditional chief of the community donated communal land and instructed community members to provide labor to grow a crop that the CHWs could sell. Due to the absence of the leader at the time when planting should have occurred, the field lay fallow, and the financing scheme did not yield any crops. However, most of the CHWs in the experimental area reported being more satisfied with their work since the scheme's inception because they felt the community showed greater appreciation for their efforts. A similar in-kind contribution scheme in Liberia was also found to be inadequate for generating CHW incentives, despite the fact that such a mechanism was used to pay traditional healers for their services. Attrition remained high, and CHWs complained that community labor in their fields had been inadequate to compensate them for their PHC activities.

However, the financing study in rural Carrasco Province of Bolivia was able to generate material incentives in the form of the local staples, potatoes and wheat, for community members selected and trained to provide very basic curative and preventive services. Community councils in seven villages signed an agreement with a local private voluntary agency to provide payments of wheat or potatoes on a per capita basis that would pay half the operating costs of the CHW program, including a monthly stipend for the health promoters. During the first year of the scheme, crops were collected by agricultural cooperatives and village health committees formed with assistance from the researchers. Utilization of the CHWs and financial support have remained fairly constant during the 11 months in which the scheme was monitored by the researchers. A remaining problem is the long-term sustainability of the payment mechanism, due to the efforts required of the health committee to collect the quotas from each family. The researchers and the private voluntary organization are continuing to study ways of strengthening the ability of the communities to manage this financing mechanism.

A third type of financing mechanism for CHW incentives studied by PRICOR-supported researchers was revolving funds. As described earlier, revolving funds for drugs and sanitation and nutrition activities are common

in rural areas of Thailand. Incentives given to fund managers, who were often CHWs, included profit margins and free or discounted fund services. The drug funds have proven the most successful in large part because they are more profitable and provide direct material incentives for CHWs to dedicate time to fund management.

The success of revolving funds may also relate to the support mechanisms developed to manage the funds. In Thailand, community committees were organized to manage the funds. In contrast, the revolving drug funds managed by rural health promoters in Ecuador were quickly decapitalized, due both to the inexperience of the promoters in managing the funds and the difficulties they experienced in collecting drug charges from patients. The presence of a community body, particularly comprised of community leaders, may be essential for enforcing a fund's payment schedule.

### C. Conclusions

This chapter presents important lessons from PRICOR-supported studies in the area of CHW incentives. While conclusions drawn are admittedly based on the limited experience of a few studies, some generalizable findings do emerge.

#### 1) Incentives are necessary for CHWs.

Attrition and poor morale of CHWs are common problems in PHC programs throughout the world; incentives are clearly needed to motivate both paid and volunteer CHWs. While concern about CHW stability has been the major motive for consideration of incentives, the use of incentives to improve the effectiveness and efficiency of PHC services should receive more attention. Study results showed that incentives can improve program effectiveness by increasing CHW job satisfaction and rewarding better performance.

#### 2) A variety of incentives is useful to motivate different CHW behaviors.

PRICOR-funded studies demonstrated that CHWs may be motivated by a wide range of incentives, some of which can be controlled or easily implemented by decision-makers, and others of which cannot be controlled but can be used to the advantage of PHC programs. Studies also found that while both material and non-material incentives are useful and have specific strengths, the appropriateness of a particular incentive depends on local conditions. The lesson from the PRICOR experience is that consideration of a wider range of possible incentives gives PHC program managers more flexibility; monetary remuneration is not the only effective motivator of CHWs. Moreover, the experience of some studies, such as those in Bolivia, Swaziland, and Brazil, is that a combination of incentives may be more effective than reliance on a single motivating factor. Different types of incentives may reinforce each other and multiply the effects. Also, some incentives that alone do not completely effect the desired CHW behavior may do so if reinforced by other incentives or motivating factors.

#### 3) Incentives do not necessarily require additional resources.

PRICOR-supported studies demonstrated that the use of incentives does not always imply the need for sustained generation of funds or significant

expenditures of scarce resources. Incentives may simply consist of intrinsic social and cultural factors that facilitate CHW motivation. Other effective incentives involve feasible steps that decision-makers can take to improve CHW job satisfaction without major investment of new resources. As was shown by PRICOR-funded studies, the addition of tasks that increase community acceptance and CHW job satisfaction; increased supervision and support from health system; in-service training; and increasing CHW responsibility for planning and evaluation have all been shown to contribute to CHW job satisfaction. Studies in Brazil and Swaziland also suggest that in instances where CHWs are paid, ensuring the regularity of the remuneration may be as important as the amount paid.

#### **4) Volunteers need incentives.**

Volunteers, while not directly remunerated for CHW tasks, also require incentives such as community support, self-satisfaction from tasks, and training and skill enhancement opportunities to avoid high turnover. Moreover, it seems that certain conditions facilitate volunteer satisfaction and stability. First, similarity of the assigned PHC tasks to the volunteer's traditional role in the community facilitates the volunteer's sustained activity in the CHW role. Second, the tasks assigned must be discrete, clearly defined, and reinforced by community acceptance; in some sense, doing a task must be its own reward. Finally, studies found that it is difficult to maintain volunteers in broadly or vaguely defined CHW roles. Volunteers are better suited for short-term or one-time tasks than for sustained activities, unless these activities relate closely to the person's normal activities or community role. Conversely, when PHC tasks are numerous and time-consuming and interfere with the individual's income-generating activities, material remuneration is required for CHWs to continue working.

#### **5) Community financing schemes can generate adequate CHW incentives if carefully designed and managed.**

Community financing schemes were used successfully in several studies to generate funds or in-kind contributions for CHW incentives. However, the researchers learned that there are several prerequisites if such schemes are to generate sufficient resources and are to be sustained. Foremost among these requirements is that the community be involved in the design and development of the scheme, from its inception. Resources are also more easily generated if community members are asked to pay for services or commodities that they are willing to pay for or have paid for in the past.

The mechanism for community contributions to CHW incentives is equally important. Schemes which require ad hoc contributions or pre-payments are frequently less popular with communities than fee-for-service or other schemes that tie small contributions to specific services or products, even when payments are made in-kind. If adequate resources are to be generated, contributions must be monitored by community authorities and not left open to the discretion of community members. Finally, it should be recognized that maintaining schemes has certain costs in terms of time and effort to manage them. The sustainability of any community financing scheme depends on having adequate mechanisms for management and support. Thus, attention must be given to enabling community members to administer financing schemes if they are to be continued by communities once outside support is withdrawn.

## Chapter VII

### COMMUNITY PARTICIPATION

Due to the PRICOR Project's focus on research to solve operational problems in PHC delivery at the community level, community participation in the design, implementation and maintenance of PHC programs was a predominant issue in PRICOR-funded studies. Out of 30 PRICOR-supported studies related to community health workers, 11 dealt primarily with community involvement in CHW activities while another 8 explored the topic as one of several important problem areas. The fact that so many of the projects addressed community participation and support as a major concern indicates its critical importance to the success of PHC programs.

In presenting PRICOR study findings concerning community participation in CHW activities, no attempt will be made to say what such participation is (or should be) and what it is not. Such definitions were left to the discretion of individual investigators, according to their own local contexts. It may be noted that the kinds of community participation examined or tested by PRICOR-supported studies ranged from collaboration of neighbors in health promotion actions to decision-making about the content and direction of CHW activities.

The level and magnitude of community involvement also varied. In some cases, entire villages voted on CHW selection or payment mechanisms. More commonly, community involvement was delegated to elected leaders or groups, or was represented by self-selected or otherwise designated subgroups. Obviously, the depth of participation varied according to how representative of the entire community such "representatives" were. While the definitions used by these studies for "community" and "community participation" varied considerably, their experiences offer useful insights into the range of mechanisms and areas in which communities can play a meaningful role in CHW activities.

The operational problems identified by PRICOR-supported investigators that led them to consider community participation were quite diverse. Several projects determined that underutilization of PHC services was a major difficulty. A number of researchers identified general problems such as low level of program support, low status of CHWs and high worker turnover. Others pinpointed problems related to specific aspects of their programs, such as insufficient financial support, difficulties in CHW selection, training or supervision, or lack or relevance of CHW tasks to local needs and priorities. Certain projects found that community interest in preventive and promotive services was low and CHW performance in these areas poor.

Past experience in the field of community development, much of it in areas other than health, has indicated that strengthening community participation in local projects may help to solve many of the problems identified above. Involvement of the community in project decision-making and implementation can be a major means for improving the fit between program activities and the community's needs, and increasing community support and use of services. Community participation in the selection, support and supervision of CHWs is likely to lead to improved worker effectiveness in areas of concern to the

community, as well as to increased worker satisfaction and lower turnover. As community organizations and individuals gain experience through program participation, they will hopefully also acquire the skills and self-confidence to become the active agents of their own development, rather than simply beneficiaries of outside aid.

## A. Rationale for Operations Research on Community Participation

Although community participation is potentially a powerful tool for improving PHC services, there is much to be learned about how to involve local groups and individuals and what works best in particular types of situations. Operations research can be a very useful tool for both exploring problem areas related to community participation and developing and testing alternative solutions. A number of major issues in this field were addressed within the PRICOR-supported studies that will be examined in turn. They include:

- Methods for mobilizing community support of CHW programs, including:
  - mechanisms for fostering community participation, and
  - types of community organizations to involve.
- Types of community participation in designing and implementing CHW programs, including:
  - planning and organizing CHW programs,
  - specifying CHW tasks, and
  - selecting and training CHWs.
- Types of community participation in maintaining CHW programs, including:
  - CHW selection,
  - provision of CHW incentives and support, and
  - utilization of CHW services.

## B. Operational Issues Related to Community Participation

### 1. METHODS FOR MOBILIZING COMMUNITY SUPPORT OF CHW PROGRAMS

PRICOR-funded studies contain a wealth of information about strategies for fostering community participation in CHW programs. Certain projects found it was helpful to explore motivations and mechanisms for participation before deciding on organizational strategies. The Swaziland team, for example, studied the experience of a number of earlier development efforts in the area of community participation, and also asked the advice of local leaders before developing its strategy. The investigators in the India study interviewed community members, project staff members, and directors concerning motivations for participating in community health programs, impediments to participation, and methods best suited for communicating with community residents.

Many groups found it useful to investigate what forms of participation work best in particular cultural contexts. Several groups found that cultural considerations were quite important when selecting strategies. In Malawi, for example, some areas are matrilineal while others are patrilineal. In the matrilineal societies women's groups are strong and seen as an important

vehicle with which to link a project. In Swaziland, communities do not exist as in other countries, as rural people tend to live in widely scattered homesteads. Researchers found that "community" organization and self-help schemes were very recent innovations. Some of those focusing on short-term construction projects were successful but establishing community responsibility for maintenance of a system has been difficult. The local chiefs in Swaziland are also very powerful, with the right to allocate land, ask subjects to perform labor, etc. The investigators recommended that all future health development projects should first strive to get these leaders' support.

Certain groups decided, after investigating traditional organizational structure, to experiment with approaches that went against or "beyond" usual practices. In the Bolivia project, for example, efforts were made to include women in each stage of the project. The new health committees created under the project were the only village groups that included the direct participation of mothers. Whether this move toward a greater role for women in development will be accepted over the long-term is not yet known.

Some projects used "top-down" strategies for promoting participation while others stressed the importance of fostering community self-reliance. The researchers in the Haiti/AOPS project for example, involved community representatives in many stages of project planning but never gave them full choice or program control. Leaders of the study communities were approached only when strategies had already been developed, to explore the feasibility of alternatives and obtain their approval. In Papua New Guinea and Uruguay, on the other hand, investigators stressed, from the beginning, the need to train health workers and community leaders in problem-solving and other development skills and to transfer decision-making to local groups. As these examples illustrate, the top-down approach did give researchers more control over study design, but those groups who gave up that control felt the transfer of responsibility to the community heightened local enthusiasm and commitment and increased the likelihood of the projects continuing after the study teams departed.

A large number of studies explored issues related to what types of community organizations to involve in development efforts. For example, several studies investigated the advantages and disadvantages of using existing organizations vs. creating new ones. The Haiti/AEDC project thoroughly explored the possibilities for using existing organizations to provide a structure for a rotating credit scheme which would both support CHWs and encourage mothers to learn child survival skills. The researchers finally decided to develop new "affinity" groups of mothers of high-risk children, patterned after the traditional Haitian credit associations or cengles.

The most extensive investigation of organizational alternatives was conducted in the India study which compared results in 8 separate health projects. Analysis of the India case studies suggests that while starting with existing organizations helped projects achieve coverage more quickly and easily, use of a pre-established organization, if it only represented part of the community, could perpetuate restricted community participation. Several projects that started new organizations eventually achieved very broad levels of participation.

The Uruguay study found that health committees formed from members of existing community organizations were more effective in mobilizing community activities than committees made up only of individuals identified by health center staff.

Certain projects explored the pros and cons of using single-purpose vs. multi-purpose organizations. The Papua New Guinea study team, for example, decided to create multi-purpose community development committees because both church health staff and local government officials felt it would not be appropriate to restrict committee focus to health when rural communities had so many social and economic problems as well. Project experience showed that the broader development focus worked well. The India study determined that while certain multi-purpose cooperatives had floundered when a single activity failed, results in general indicated some advantages for multi-purpose organizations. They were often able to gain widespread support by first meeting strongly felt needs, such as for food and water, and then later generate support among their members for other activities, such as health.

A few groups considered other issues, such as the use of legal vs. traditional groups or formal vs. informal organizations. In Ecuador, for example, investigators stressed the importance of involving representatives from both legal organizations (such as communes, cooperatives, associations, etc.) and traditional organizations (such as those in indigenous communities) to encourage cooperation between traditional and modern factions. In Korea, researchers explored the effectiveness of using leaders of formal village organizations such as village councils vs. leaders of informal community groups such as 4-H and mothers' clubs, church groups, development committees, etc., to support PHC activities. Comparisons made using statistical analyses, computer simulation and cost-effectiveness analysis indicated that use of the formal groups (which are very powerful in Korean rural areas) was for the most part more efficient and effective.

A wide variety of mechanisms were used for fostering community participation. Studies used techniques that ranged from the more traditional visits or interviews with community leaders, public and small group meetings, and planning sessions, to experimentation with group decision-making strategies such as the nominal group technique, Delphi, and multiple criteria utility assessment. Some techniques such as community diagnosis mapping, which involves drawing maps of community sectors and denoting health problems with simple symbols, were particularly helpful in situations where literacy level was low. The following two sections will describe a number of these techniques, as mechanisms for community involvement in various aspects of CHW programs are examined.

## 2. TYPES OF COMMUNITY PARTICIPATION IN DESIGNING AND IMPLEMENTING CHW PROGRAMS

There are several critical steps involved in designing and implementing CHW programs, including planning and organizing the programs, specifying CHW tasks, and selecting and training the CHWs themselves. A number of the PRICOR-funded studies examined the roles the community could play in each of these areas, as well as possible methods for facilitating participation. Study findings and results in each of these areas will be reviewed below.

a. Community Role in Planning and Organizing CHW Programs

A number of PRICOR-supported projects included the community in one-time efforts in CHW program development, while some also strove to design strategies for involving local representatives in a continuing planning process.

Certain studies involved the community in the initial design of the CHW activities in order to enhance local acceptability of the PHC program. In the Tanzania supervision study, for example, the research team assisted villagers in each of the study communities to set PHC goals in terms of percent coverage and utilization in each activity area. The researchers felt it wasn't absolutely essential that the goals be realistic, but rather that the planning exercise motivate and educate the villagers about PHC. The exercise did create a great deal of interest among village leaders in the activities of VHWs. In the Brazil/UVA study, all decisions about how healers would be involved in the delivery of ORT came out of group discussions between the healers, project staff and at various times, community members. The participatory process used to design the ORT intervention generated enthusiasm and a sense of project ownership amongst the healers.

The researchers in the Haiti/AOPS study involved the community at several points in the initial program planning process. One of their many preliminary studies involved interviews with an average of 5 leaders in each of 18 villages to obtain their ideas about the role of the community in ORT promotion. After alternative solutions were developed by a Policy Committee and then revised by the District Advisory Committee, they were presented to two leaders from each study community who were asked to consider the plans in terms of feasibility and the extent to which their cooperation could be expected. The researchers then made further revisions of the plans based on these meetings. In the Mexico study, during the initial problem analysis phase researchers also conducted interviews with formal and informal leaders and used the nominal group technique in public meetings to assist the community in ranking their major health problems.

Some PRICOR-supported studies designed strategies for including the community in an ongoing process of program planning, through mechanisms such as periodic community meetings and organization of village health committees with major roles in program planning. The Mexico study team, for example, designed a continuing planning process they termed microplanning, which included community input. Community Health Auxiliaries used community meetings, small group discussions and conversations with formal and informal leaders to involve community members in identifying key health problems and their causes and then incorporate the problems and actions for their solution into their weekly and monthly work plans.

Both the Papua New Guinea and Uruguay projects designed CHW programs which gave leaders and villagers practice in problem-solving and then encouraged them to play the major role in local health development activities. In Uruguay the community members who made up the health committees and who served as volunteer health promoters were trained together to identify problems and develop and implement action plans for resolving them, and then encouraged to continue this process during their health committee meetings. In Papua New Guinea, training activities involved health workers and villagers, as well as

higher level administrators, in learning new ways of planning together. Villagers practiced new skills of problem-identification and solution development using techniques such as brainstorming, community diagnosis mapping and the solution development matrix, which they then continued to use in on-going program planning.

The PRICOR experience indicated that while inclusion of the community in the initial program development process is often highly beneficial for design of a program that adequately meets local needs, development of effective mechanisms for on-going community participation in program planning is essential for sustaining community support and involvement. The experience of projects such as those in Uruguay and Papua New Guinea also indicates that inclusion of training in skills such as decision-making and problem-solving is important if community members are to participate effectively and fully in program planning.

#### b. Community Role in Specifying CHW Tasks

PRICOR-supported investigators found that involvement of local leaders and residents in CHW task selection was often a very important tool for fostering community participation. The extent to which community members had full control over specification of the workers' tasks varied, depending on the scale and circumstances of the particular projects.

Researchers in the Mexico study, for example, identified local involvement in selecting CHWs' tasks as the solution to the problem of CHWs being overburdened with too many tasks that often had little relation to local health problems. Community health auxiliaries throughout the State of Mexico had been assigned a large number of uniform, centrally established tasks despite the wide geographical and cultural variations among areas within the State. While the health system still required that these CHWs perform a set of basic tasks, additional tasks more relevant to solving locally critical problems were identified with the participation of the community through the process of microplanning described earlier. The field test of this process demonstrated that involvement of the community in task selection resulted in greater community awareness of and support for the CHWs' activities.

In other studies, local representatives played the key role in task selection. The investigators in the Uruguay study, for example, felt strongly that local self-determination was an essential part of development, and thus developed a program which left tasks entirely to the health committees and promoters to define. Each group began by developing criteria for choosing what the promoters should work on and then selected activities that best met those priorities. In two of the three experimental neighborhoods, the community organization efforts resulted in a number of health development activities. In the Papua New Guinea project, as in the Uruguay study, community leaders first learned problem-solving skills and began the process of working with health workers and other groups to identify priority activities during training. Development committees were formed in all field test communities, and the village leaders and workers then continued to identify projects and work jointly, at times drawing in outside resources, to complete them.

Experience within the various PRICOR-supported studies indicates that in national or regional level programs it is possible to develop effective task

selection strategies that take account of the desires of both higher and local level groups. The Mexico study provides an example of successful integration of the priorities of both governmental and community groups. In certain cases, such as in the Swaziland project, investigators found the central government placed certain limits on the types of tasks local groups could select, but the researchers were creative enough to devise an approach that still allowed some local choice between a range of acceptable alternatives. Community involvement in selection of CHW tasks seems to be a very important element of an effective community development approach, as it provides a critical opportunity for encouraging joint community/worker efforts to tackle locally relevant problems. (More detail on specific studies that focused on this topic is presented in Chapter II, "Specification of CHW Tasks".)

### c. Community Role in CHW Selection

PRICOR-funded studies examined eighteen CHW selection strategies. In about half of the projects studied, the community played an active role in selecting the health workers, either by itself or jointly with health professionals.

Community participation in CHW selection has been viewed as a potential means for increasing community interest in PHC programs, improving utilization, or enhancing the CHW's status within the community. Operations research studies funded by PRICOR addressed the issue of community involvement in one or both of two important aspects of a CHW selection strategy: selection mechanisms (who selects, how) and selection criteria (which criteria, how determined).

Community representatives or groups were important participants in the CHW selection mechanisms used in PHC projects studied in India, Nigeria, Bolivia, Ecuador, Uruguay, Haiti and Benin. Types of involvement ranged from whole communities to village health committees, village elders, local councils, membership of cooperatives, etc. Most commonly, community leaders or selected groups such as health committees were the active participants in CHW selection. The India study examined who selected CHWs in eight private voluntary health projects, finding three major patterns. In four projects, workers were selected jointly by project leadership and a local group such as the milk cooperative, village council, village leaders, block development officers, etc. In one project there was joint selection by the project staff and the entire village. In three projects selection was undertaken largely by the project staff.

Health projects sought community participation in CHW selection for two major reasons: to increase the acceptability of the health workers chosen, and to facilitate community material support for CHWs. In nine of the ten projects studied in which the community contributed to the support of the CHWs, community members were also involved in their selection. The one exception was a project in India where project staff decided that CHW selection would be done by health professionals to avoid the "political bias" that would occur if health worker selection were left up to the community. In Bolivia, selection of the CHW by the community was stipulated as a condition for the community's provision of financial support for health worker salaries.

Community input into selection criteria took several forms, from community selection of CHWs using unspecified criteria, to household or key informant interviews in which community members were asked to indicate their preferences

for CHW characteristics or capabilities. In several instances, community groups were given criteria developed by health professionals and asked to apply them, as well as add their own criteria. For example, in Ecuador the researchers found that selection requirements for promoters lacked prerequisites considered important to the community and, in fact, often excluded persons the community considered good candidates. They designed a selection strategy which incorporated the viewpoints of both the villagers and the MOH, recommending that criteria regarding minimum capabilities and skills be specified by the government while criteria related to desired personal attributes be designated by the community to be served. In the Uruguay study, the investigators determined the selection criteria for promoter candidates and charged the health committees with applying them. The researchers presumed that their criteria, which included community residence, interest in community problems and community acceptance, would enhance promoter effectiveness.

In several of the health projects studied in India, a major problem encountered was the difficulty of identifying workers acceptable to all groups in villages with sharp caste differences. In one interesting strategy for addressing this issue, which was quite successful in the Jamked project, health professionals specified low caste as a requirement and then selected strong candidates who would eventually prove themselves widely acceptable among all caste groups.

The results of PRICOR-funded studies indicated that inclusion of the community in the CHW selection process was a useful tool for encouraging community participation in the program in general, as well as for increasing acceptance and utilization of CHW services and facilitating community financial support for CHW incentives. Studies such as those in India and Uruguay also demonstrated that selection strategies could be developed that successfully integrated both the community and the health system in the process.

However, the fact that not all projects studied found the need to include the community in the selection process does point to the fact that such participation may not always be necessary. Reasons for not involving the community include decisions to work with a specific group of people in the community because their traditional roles predispose them to perform CHW tasks; scarcity of volunteers or candidates such that no real selection is possible; the services that CHWs provide are already so popular that community acceptance is not an issue; or there is some reason why community selection would result in CHWs who were ineffective or unstable. (See Chapter III, "Selection of Community Health Workers", for more detail on specific studies and results related to this topic.)

#### d. Community Role in CHW Training

Twelve PRICOR studies sought to develop or improve strategies for the training of CHWs. About half of these studies focused in a significant way on involvement of the community in the training process as a means of addressing problems such as low utilization of CHW services and failure of existing curricula to address community concerns. The investigators felt that greater involvement in the training process would strengthen community support for and understanding of the CHW programs. Studies that explored the community's role in training examined a number of innovative approaches to increasing community participation.

Many studies included some kind of community input when planning CHW training programs. In the Uruguay study, interviews of community leaders, as well as household surveys, provided information for selecting trainees and structuring training content. In most cases, community input was passive, usually through inclusion in household surveys of questions about important problem areas on which training activities could be focused.

In a few cases, however, active involvement of community groups in CHW training was sought. Two studies devised training strategies in which CHWs and community representatives were trained together. In the Uruguay study, members of the neighborhood health committees were trained together with promoter candidates, to enable them to learn, even during training, how to work in collaboration to identify and solve local problems. In the Papua New Guinea project training involved the local health workers, village leaders, and church and provincial government officials in a process of problem-solving that eventually began to substantially alter the roles of each group. The training workshops allowed participants to develop a common understanding of PHC, taught them community diagnosis skills, and provided an opportunity to actually use the techniques in nearby communities. Villagers gradually came, to see themselves as the "doers" and to regard the outside agents as resources.

In both examples, community development skills were emphasized as an important part of training, teaching a number of innovative techniques for encouraging community participation. The Uruguay study training taught participants to identify health problems, work in groups, raise community consciousness about health issues and develop viable solutions. Role-playing and group dynamics exercises helped reinforce learning in these new areas. The Papua New Guinea training facilitated joint problem-solving by providers and villagers.

Placing the training activities near or in the communities facilitated local involvement and helped improve the fit between the training and the CHWs' actual working conditions. The Uruguay researchers organized the sessions for training promoter candidates and health committee members in the local neighborhoods. In the Papua New Guinea study, the technique of multiple criteria utility assessment (MCUA) was used during several planning sessions to select a training alternative. A key aspect of the strategy selected was the location of the sessions within the rural villages, which planners felt was essential if remote villagers were to become a real part of the decision-making process.

Several projects used or proposed the use of community leaders and representatives of local organizations as trainers. When necessary, these community people were first trained themselves in the appropriate skills. In the Haiti/AOPS study, for example, school teachers, community leaders, religious leaders, owners of small stores, traditional birth attendants and leaders of mothers' groups were trained in ORT promotion and then asked to train others. The Ecuador researchers recommended that representatives of county or provincial level community organizations serve as CHW trainers to introduce ethnocultural factors related to health and offer ideas concerning how traditional beliefs and practitioners could be integrated into the process, as such an emphasis was missing in the existing training curriculum.

Study results indicated that the involvement of the community in CHW training could definitely be an important and effective mechanism for fostering

community participation and support. In Haiti, for example, volunteers trained by the project were able to reach 43% of the households with ORT messages, and 28 ORS sales posts were opened by shop owners that had received instruction. In Uruguay and Papua New Guinea, health workers and health development committees began working closely together and initiated a number of community projects. In contrast, research projects such as the Philippines/IPH and Korea studies, which identified community support as a problem but failed to emphasize community development within their training programs, had less success in fostering participation.

### 3. TYPES OF COMMUNITY PARTICIPATION IN MAINTAINING CHW PROGRAMS

The experience of PRICOR-funded studies endorsed the importance of continuing supervision of CHWs, as well as provision of meaningful incentives and support. Community members can play an active and potentially very effective role in such program maintenance activities through participation in supervision and monitoring of CHWs, direct financial support for CHWs and through their utilization and acceptance of CHW services. Study findings and approaches relating to the community's role in each of these areas will be examined below.

#### a. Community Role in CHW Supervision

While traditionally supervision agents have been health professionals and government agents of various types, PRICOR-supported studies demonstrated that community members can also play a significant role in the supervision process.

Five studies identified mechanisms for community participation in supervision. In Thailand, it was recommended that community leaders, in addition to health officers, be involved in supervision, with the community responsible for administrative supervision, while subdistrict health officers would focus on technical supervision. In Ecuador a systematic analysis of the supervision system showed that the auxiliary nurse should play the key supervisory role, but that the community, represented by members of formal (e.g., associations, cooperatives) and informal (elders, tribal councils) organizations should also participate in the process. In the Uruguay and Nigeria/CRCN studies, the local health committees played a key role in CHW supervision. In Tanzania, a "team safari" approach was adopted in all villages, whereby the village health committee participated in a supervision team which also included the MOH supervisor, local teachers, and agricultural and water development workers.

In these cases, researchers identified specific kinds of supervisory tasks that could most appropriately be performed by community participants. In the Thailand/Mahidol study, specific supervision tasks identified for the community leaders varied from region to region, but often included activities such as advising, problem-solving, supporting, evaluating, and motivating CHWs. In Ecuador, organizational representatives were assigned such roles as evaluating CHW activities and coordinating them with other development efforts. In Uruguay, health committees were responsible for supervising and supporting neighborhood health promoters in their work, through weekly or bi-weekly meetings with the CHWs in which they reviewed progress with community health promotion activities. In the Nigeria/CRCN project, health committees were supposed to hold regular meetings with the CHWs to assist with

problems and lend support. Results from interviews showed the CHWs who had regular meetings with their committees stayed, on the average, more than twice as long on their jobs. In Tanzania, the multi-disciplinary "safari" teams visited each house on a regular basis. The visits served to monitor the CHWs' work, alert them to health issues, provide technical support, and identify cases requiring CHW follow-up.

Results indicated various effects of increased community involvement in supervision such as a decrease in CHW attrition, increased community interest in and appreciation of CHW activities, and improvement in CHW performance. (See Chapter V, "Supervision of Community Health Workers", for further details on the findings of the supervision studies.)

#### b. Community Role in Provision of CHW Incentives and Support

Nine of the PRICOR-funded CHW studies addressed the question of community financing or other means for providing CHW incentives and support. The Thailand/NSEDB and India studies documented a wide variety of payment mechanisms, while a number of other projects designed and tested new and often innovative community-based financing schemes. (A separate PRICOR comparative analysis paper, Community Financing of PHC: The PRICOR Experience, provides an in-depth discussion of the design, implementation and management of community financing schemes.)

A number of recurring problems were identified in the study areas that led to this focus on CHW support. Governments and donor groups were often unable to provide all the financing required to maintain CHW programs. Lack of adequate compensation has frequently led to high CHW attrition rates, as was found in PHC programs examined in Nigeria, Bolivia, Liberia, the Philippines and Swaziland.

Due to limitations on resources available for PHC, the community's role in providing CHW support and incentives has received growing attention in recent years. Because of their focus on community-level projects, PRICOR-funded studies produced a number of findings on mechanisms for community financing of CHW incentives.

In several studies, community role in scheme design was essential in order to understand what kind of services or activities community members were willing to pay for. In the Benin study, for example, the families in the 15 project villages were asked to select their preferred financing scheme. In the Bolivia project, the community was surveyed concerning its financing preferences, and then working sessions with community groups and individuals, as well as open community discussions were held to plan in detail the payment mechanisms selected. In the PHC projects studied in India, the second most common type of community meeting held, after that for health education, was related to planning program finances and determining CHW salaries and charges for services.

PRICOR-funded projects examined and tested a variety of schemes for generating CHW incentives in which communities played active roles. The five most common types of community support provided are examined below.

Fee for service: In the Nigeria/CRCN study area, CHWs were usually paid from patient fees for certain treatments that were managed by village health committees. In Pahou Commune in Benin, commune residents selected a fee-per-episode financing scheme that would cover curative treatments. Prices were marked up to cover costs of preventive services. In addition, it was decided that non-members of the commune should be charged higher fees to discourage outsiders from utilizing services. It is interesting to note that the commune residents rejected a pre-payment option because they were hesitant to put up all the resources up front for the new health project. The Commune Health Committee participated in periodic review of coverage levels and was responsible for payment of CHW remuneration, overall bookkeeping and fund management. Through this financing system, the communities were able to pay for about half the operating costs for all health services. Attrition rates among CHWs have remained low since the project's inception, at less than 7% in 3 years. The Benin researchers concluded that one of the factors which increased the viability of the scheme chosen was that it was based on the payment for services for which community members had already displayed a willingness to pay.

Credit schemes: The Haiti/AEDC study determined that while local people were not willing to finance preventive services directly, they would donate money to obtain the right to receive credit. Mothers with malnourished children were asked to form "affinity" groups with friends and to create a group fund through monthly dues. If the group members could demonstrate competence in four child survival interventions that their CHW had taught them, and if their children were fully immunized, they became eligible to buy health cards which allowed them to obtain credit at a low rate. The CHWs' salaries were based on the number of mothers that qualified for the cards, a strategy which linked health prevention, performance incentives and revenue generation.

Revolving funds: Revolving drug, nutrition, and sanitation funds were used to support CHWs in Thailand. The Thailand/NSEDB study indicated that the drug funds were most numerous and profitable. The MOH usually provided the initial stock of drugs and then village meetings were held to elect managers, sell shares, and raise more funds, if needed. Committees, typically composed of 10 to 12 villagers and often the CHW, then administered the funds. Revolving drug funds were also implemented in the Liberia/CHAL and Philippines/Visayas studies, but in both cases the funds were not successful in providing sufficient revenues to maintain CHW incentives.

In-kind contributions: In-kind contributions by communities for CHW support took a variety of forms in PRICOR studies. In the Bolivia project, researchers proposed, based on community surveys and discussions with communal councils, that quotas of wheat or potatoes be collected from each family after the harvest by community organizations and sold to support the health worker, who was a member of the community. In the Swaziland project, the tribal chief chose to support the Rural Health Motivators (RHMs) by donation of communal land and agricultural labor to produce a crop the RHMs could sell or use. In the Liberia/CHAL and Senegal studies, community members were asked to work in the CHWs' field to compensate them for their work.

The schemes which depended entirely on spontaneous contributions of communal labor to work fields for the CHW were not very successful in generating adequate income for the CHWs, usually because the labor was insufficient or

undependable. The in-kind contribution scheme seemed to work the best in Bolivia, where groups of community leaders or existing organizations were responsible for collecting the family quotas.

As the examples above illustrate, the PRICOR experience indicates that the community can play a substantial and varied role in provision of CHW support. Decisions about what and how the community will contribute to CHW incentives clearly depend on local social, cultural and economic factors. Several of the studies found that cultural factors were important to consider when selecting support mechanisms. In Swaziland, for example, investigators found that in-kind donations were usually given only to non-community members and thus asking people to give RHMs in-kind support could conflict with their status as community members.

PRICOR-funded studies do show that a wide range of mechanisms are feasible and capable of contributing significantly to CHW incentives. However, decisions about community financing cannot be made in isolation from community needs, interests and willingness or ability to pay for health services or commodities. Several studies, such as the Benin and Bolivia projects, demonstrated that the chance of success of a community financing scheme is increased if the community is involved in all phases of the scheme development, from conception to implementation. Community involvement in the ongoing management of schemes is especially crucial for the long-term viability of community financing mechanisms. How to attain effective community participation in managing and maintaining financing schemes is an important operational issue which needs further research.

### c. Utilization and Acceptance of CHW Services

Utilization of CHW services may be viewed as a passive form of community participation, since communities can and do exert significant pressure on PHC services by means of their acceptance or rejection of services offered. Factors influencing utilization of health services have been explored in numerous research studies, most of which have tended to focus on physical (distance) and economic (costs) access to health services or on user characteristics such as education, income and occupation. Fewer utilization studies have focused on the acceptability of PHC services to the community or the community's sense of ownership of CHW services.

PRICOR-funded studies found that underutilization of CHW services was a major problem in a large number of countries, limiting PHC coverage and undermining health workers' morale. Studies identified a number of varying reasons for less than optimal use of PHC services on the community's part. These reasons included both health system factors, that presumably could be changed by decision-makers, and community factors, some of which could be taken into account by PHC program managers to improve the acceptability of CHW services.

Health system factors included problems with availability and accessibility of services. In the Bangladesh study, villagers reported fewer difficulties in terms of travel time, waiting periods and clinic schedules with the unlicensed private practitioners (Daktars) than with the government-sponsored PHC services. In Papua New Guinea, access to health centers was limited by distance as well as geographic barriers. Another problem was the lack of cultural awareness on the part of workers, such as found in Papua New Guinea,

where health workers had little understanding of or contact with the residents of remote villages, or in Ecuador, where promoters were not oriented in how to integrate their activities into the local socio-cultural context and were often perceived to be in conflict with traditional care-givers.

The majority of barriers to utilization that were identified by PRICOR-funded studies related to community preferences and attitudes to which the official health system often did not respond. For example, the services of other service providers, such as the *Daktars* and traditional practitioners in Bangladesh, were found to be more desirable in a number of ways to community members than those of PHC workers. As was found in the Nigeria/CRCN, Korea and Swaziland studies, lack of community acceptance of CHWs is due in part to lack of community demand for the preventive and promotive services that CHWs often provide and a greater desire for curative services CHWs could not provide. This in turn fuels the lack of respect for the skills of CHWs, as was found in Peru and Nigeria, where the services of higher level health workers were much more highly valued by community members.

However, apart from community attitudes that work against PHC services, the lack of awareness of available services, as was found in a number of health projects surveyed in India, or limited knowledge of the program's activities, as found in Korea, may also limit utilization. Also, monetary considerations may inhibit utilization, as was found in a number of the projects studied in India, where community members reported that they did not use the health programs either because they were too poor to pay, or rich enough to afford private care.

PRICOR-funded studies identified and tested a number of interesting approaches for increasing the community's utilization of CHW services, many of which sought to improve the attractiveness of services provided and the acceptability of CHWs.

In terms of health system factors, changes were suggested in the way health services were being delivered by the Bangladesh study, which recommended that the availability and accessibility of services be increased by establishing a clinic in every ward on sites selected by the community and PHC officials and by extending clinic services to evening hours. Many more studies identified modifications that could be made in CHW services that would make them more responsive to community preferences.

For example, the Nigeria/CRCN investigators recommended that community health aides, higher level health workers who could provide both curative and preventive services, be trained for the larger villages in order to increase the accessibility of the curative care desired by the community. The researchers also recommended that the health aides become involved in health education activities because their curative tasks enhanced their credibility.

In Haiti, Brazil and Benin, the link between community health workers and more respected, higher level care providers was strengthened to increase the CHWs' credibility. The PHC programs studied in Benin and Haiti reinforced the appropriate use of levels of care, including the CHW at the most peripheral level, by imposing negative sanctions in the form of higher fees to those patients who came to the health centers without a referral from the CHW. This measure notably enhanced the community's perceived value and utilization of

the CHW. The role of "gate-keeper" was also found to be useful in Brazil where patients referred to the support units by FSESP visitadoras receive higher priority than those that by-pass them.

Providing CHWs with additional training or technical tools to improve the quality of the services they provide also was shown to improve community acceptance. In Swaziland, community approval of rural health motivators increased after these CHWs received training in child survival skills. Seven of the eight CHWs trained reported that after the training they felt that families appreciated their work more and six stated that more people were coming to see them about children's health problems. In Peru, promoters were trained to operate portable microcomputers and use interactive programs which guided them through various tasks, ensuring that no important information or steps were left out. After the microcomputers were introduced, the investigators reported that community leaders voiced greater satisfaction with the promoter.

As was discussed in the sections on increasing community participation in the design and maintenance of CHW activities, training CHWs how to take account of local beliefs and priorities was recommended or tested by studies in Ecuador, Mexico, Uruguay, and Papua New Guinea. In addition to increasing CHW job satisfaction, endowing CHWs with skills in group dynamics, community diagnosis, and microplanning helped to broaden community involvement in and awareness of what health workers do. In Uruguay, the efforts of health promoters also led to greater awareness and use of clinic services.

Finally, training traditional practitioners who already have high status in the community in PHC activities was found to be successful in the Brazil/UVA and Haiti/AOPS studies, where traditional healers and birth attendants effectively increased the knowledge and use of ORT, particularly among the poorest segments of the population. The fact that these traditional figures were already widely respected health workers in the community was important, since efforts to train local political leaders as health educators in Korea were not very successful, in part because the leaders were not recognized in their health role.

The factors influencing utilization of CHW services are very much linked to local values and preferences. PRICOR study findings suggest that programs need to increase the attractiveness of CHW services to the community if they are to be effectively utilized. The studies' experiences show that use of strategies such as those described above can have a positive effect on the use of services.

### C. Conclusions

As the above examples illustrate, community participation was a theme of major importance in a large number of the PRICOR-supported studies. Meaningful community involvement was a critical factor in a large proportion of the successful strategies developed to improve CHW programs. Investigators found that local leaders and residents can play a variety of useful roles that help develop and sustain programs which best meet local needs. Major findings related to community participation that were identified in this comparative analysis of CHW studies are summarized below.

**1) Locally appropriate mechanisms are needed.**

Mechanisms for participation that work best vary from culture to culture. Thus it is important to explore the local context thoroughly, as well as the history of past development efforts, before devising a strategy for community participation. Several investigators found that cultural considerations were quite important, such as in Malawi, where appropriate strategies for fostering community participation varied depending on whether the area was matrilineal or patrilineal, or in Swaziland, where researchers had to keep in mind that villagers, living in widely scattered homesteads, were relatively unaccustomed to joint "community" action, and that the powerful local chiefs were critical to any organizational efforts.

**2) The type of community organization that is involved in CHW activities has implications for its effectiveness as a channel of community participation.**

An understanding of the types of community organizations that can be involved in CHW programs and the factors that may effect their success in fostering community participation can be quite helpful as program strategies are designed. Whether the organization is an existing one or new can make a difference, as found in India, for example, where it was determined that existing organizations helped the projects surveyed achieve coverage more quickly, but that, if an organization represented only part of the community, its use could perpetuate exclusion of certain groups. The issue of whether to use a single-purpose or multi-purpose organization was also important in many studies. In Papua New Guinea, the use of multi-purpose development committees was found to be more effective than single-purpose ones. This was also true in India, where projects found advantages to multi-purpose groups, as they could meet community felt needs in non-health areas first and later gain support for PHC activities. If new community structures need to be formed to support PHC activities, community support may be more easily gained if members are drawn from existing organizations.

**3) Strengthening the community's capacity to participate in or manage CHW activities helps to improve the sustainability of community-based activities.**

Strategies for participation that provide community members with training in decision-making and problem-solving and stress the value of community self-reliance are important if the development process is to continue after study teams leave. Thus, while many projects found that joint action was quite effective, it seemed important for program sustainability that the community play a leading role. Projects that encouraged this approach early through actively involving community leaders and organizations in program planning and providing them with techniques and practice in decision-making during training, as in Papua New Guinea and Uruguay, were more successful in transferring the skills necessary for self-development than projects where such active community involvement was not facilitated. There are still many unanswered questions, however, concerning what on-going actions may be necessary, both from the outside and on the part of CHWs, their supervisors and the community itself, if initially effective programs are to be maintained over a longer period.

**4) Collaborative approaches that link communities, CHWs and their supervisors seem to be the most effective and sustainable strategies for community participation.**

The most dynamic and successful approaches to community participation developed by PRICOR-funded studies involved innovative strategies for fostering joint community-supervisor-health worker action in a number of CHW program areas. The microplanning strategy which investigators in the Mexico study developed, for example, was a useful approach for incorporating the views of the workers, their supervisors and the community in on-going program planning. Program approaches in Papua New Guinea and Uruguay which included joint training of health workers, health officials, and community representatives gave all groups the skills and experience necessary for effective collaboration to solve community problems. The "team safari" style of supervision developed in the Tanzania study helped provide technical support, monitoring, and alert CHWs to cases needing follow-up.

These and the many other collaborative approaches developed within the PRICOR-supported studies fostered recognition by the supervisor of the value of community involvement and helped CHWs communicate more effectively with and, in turn, be more responsive to their communities. The CHWs and supervisors benefited when communities became more aware of the value of the CHWs' efforts and what they themselves can do to improve health. By acknowledging that primary health care involves a three-way partnership (between communities, CHWs and supervisors) and that the contributions of each are important, the overall delivery of services was made more effective.

**5) Constraints to community participation should also be recognized.**

While the strength of the evidence from PRICOR-funded studies supports the benefits of community participation, it should be recognized that such participation is not always possible and that there are often limitations on how much the community can or wants to participate. At a conference of PRICOR-funded investigators in June 1986, researchers identified several barriers to community participation based on their experience with their own study and other PHC programs. They noted that people are willing to participate in PHC programs only if they perceive that such programs deal with felt priorities or if there is something concrete to be gained from participating; conversely, the opportunity costs of community participation in PHC activities are often underestimated by PHC program managers.

While lack of recognition by the community of health problems or of the value of PHC activities is often a barrier to participation, PRICOR-funded research showed that communities can be educated and motivated to participate in and support CHW services. Making community involvement a reality depends, however, on clearly indicating what the community gains from its participation and identifying channels or mechanisms for participation.

When CHW services are already widely accepted and utilized, program managers may not see the need for community participation. However, the experience of the majority of PHC programs examined by PRICOR-funded investigators was that problems with utilization are widespread. Furthermore, the growing interest in cost-sharing suggests that community involvement in decision-making about primary health care services provided by CHWs will become increasingly important to ensuring the success of PHC programs.

## Chapter VIII

### LESSONS FROM PRICOR-FUNDED STUDIES ON THE USE OF CHWS

As was noted in the Introduction, the studies which have contributed to this analysis were not designed to yield comparable findings but rather locally appropriate solutions to operational problems the researchers themselves identified. Nevertheless, PRICOR staff and consultants who participated in the analysis and interpretation of the study results realized that the 30 studies discussed here offer a wealth of insights and experience in the use of community health workers to provide primary health care services. Caution should obviously be exercised in drawing broad generalizations from a limited number of widely different studies. Yet, the authors of this comparative analysis assert that important general lessons may be learned from the PRICOR experience, beyond the locally appropriate solutions which were derived from the studies. These lessons are presented here, in the belief that the insights drawn from this comparative analysis are applicable to a large number of primary health care programs throughout the world.

#### A. Specific Lessons from PRICOR-funded Studies

Study findings and results have been presented in the six key problem areas in the use of CHWs that the PRICOR-funded studies addressed: task specification, community health worker selection, training, supervision, incentives and community participation. The principal lessons which emerged from the studies in each of these areas may be summarized as follows:

##### Specification of CHW Tasks

While no best approach for task selection was identified, studies did indicate that appropriate and effective tasks for community-level health workers can be selected by integrating the priorities of both communities and the health system in defining CHWs' roles. The studies suggest that addressing the preferences of communities for certain tasks helps to improve the acceptability of CHWs and increases utilization. Also, the fit between tasks and the person assigned to carry them out will be better if consideration is given as to what tasks that person can most appropriately perform, given his or her educational level, social role in the community, and time availability.

##### Selection of CHWs

Study findings related to the selection of CHWs indicate that criteria for what makes a "good" CHW are not universal, but rather must be established to address the needs and realities of specific communities and PHC programs. Studies also found that who selects CHWs can affect their acceptability and effectiveness in meeting PHC objectives.

##### Training of CHWs

PRICOR-funded studies found that in many PHC programs, improvements were needed in CHW training content, which too often failed to give health workers the skills they needed to carry out the tasks assigned to them. Training content can be strengthened by use of competency-based approaches and by

focusing on the specific health problems that CHWs will face in their own communities. Studies showed that dynamic, skill-building training methods were more appropriate and effective for community-level health workers than reliance on formal training approaches such as lectures. To make CHW training more interactive and competency-oriented, trainers need training and experience in the use of more innovative techniques. Strategies such as building in opportunities for practice of skills by locating training in or near the communities where CHWs will work and having trainees practice in real settings the kinds of tasks they will perform, were found to be useful. Involving persons with knowledge of the communities and experience in health service delivery at the community level is also effective in improving the quality of training.

### Supervision of CHWs

Evidence from PRICOR-funded studies supports the view that supervision is one of the most important contributors to program effectiveness. Effective programs have frequent, supportive and problem-oriented supervision that emphasize continued education, problem solving, guidance and technical assistance. Effective supervisors have no distinguishable socio-demographic characteristics. Individual ability and style are more important than any such characteristic. However, supervisors need training, and they can benefit from such supervision tools as checklists, protocols and routing schedules. Supervisors need not be medical staff. Effective supervision can be carried out by communities, lower-level health staff and groups, and it can be complemented with such communications media as cassettes and video tapes. Finally, effective supervision need not cost more. If well-designed, effective supervision can actually cost less in the short run while leading to increased performance in the longer run.

### CHW Incentives

CHW motivation is a widespread problem which affects CHW performance, stability and job satisfaction. Studies found that incentives are needed to motivate CHWs and that a wide range of material and non-material incentives may be useful. Some studies generated material CHW incentives through community financing schemes; to be successful, however, such schemes must be carefully designed and managed. While material incentives, especially money, may be needed in some cases to retain CHWs, PRICOR-funded studies demonstrated that a number of non-material incentives can also influence CHW job satisfaction, including intrinsic social and cultural values that facilitate CHW motivation, better supervision, additional training and modifications in CHW tasks. Identifying appropriate incentives for volunteers, such as generating community support for their PHC activities, skill enhancement opportunities and interaction with respected, higher level health workers, is especially important because of the high turnover frequently associated with volunteer health workers. PRICOR-funded studies also showed that incentives are useful for more than simply improving CHW stability; incentives are important for both recruiting qualified candidates for CHW positions and for motivating better performance.

### Community Participation

Finally, PRICOR-funded studies focused on how to increase community

participation in CHW components of PHC programs. Studies found that in general, communities are willing to use and support CHWs if they believe that the services that CHWs provide have some benefit. Moreover, if community participation is to be meaningful, there must be some channel or vehicle for involvement. Studies experimented with a number of effective techniques for opening a dialogue between community members or groups and CHWs and other representatives of the official health system. These techniques provided a practical mechanism for communication and resolution of conflict and facilitated the identification of locally acceptable and appropriate solutions. While generating and sustaining community involvement in CHW activities does require time and effort, the studies which sought community participation found that there was much to be gained from doing so. Studies demonstrated that involving community members or groups in CHW task selection, training, supervision, and monitoring helps to increase community interest in and willingness to support the activities of CHWs, can lead to increased utilization of health workers' services, and may improve the long-term sustainability of community-based PHC activities.

## **B. Primary Health Care Involves a Partnership Between the Community, the Health Worker and the Health System**

An overall lesson from the experience of PRICOR-funded operations research on community health workers is that many of the problems faced in deploying CHWs are very complex and do not neatly lead to quick solutions or easy answers. The dynamics of CHW activities are greatly influenced by cultural, economic and political factors inherent in any social system. Just as the communities in which they operate are often complex social systems, the problems encountered in the use of CHWs require multi-disciplinary analysis and consideration of a great many personal, community and health system factors to find appropriate solutions.

An underlying theme in the solutions developed and conclusions drawn by the PRICOR-funded CHW studies, therefore, is that health workers cannot be considered in isolation from the communities where they work or the health systems to which they are linked. The practical implication of this is that solutions to problems in areas such as the definition of CHW tasks, training or supervision are more likely to be sustainable if they take into account how the CHW interacts with the community, how the community interacts with the health system (through the CHW's supervisor), and how the health system interacts with the health worker.

The experience of the PRICOR-funded studies shows that the delivery of PHC services at the community level is very much a three-way partnership in which each party influences and affects the others. PRICOR-funded studies found that PHC programs typically do not take into account the importance of such links and interactions between the health system, CHWs and communities. Strategies which attempted to impose a solution that addressed the needs and concerns of only one partner were less successful or sustainable. Indeed, the most successful PRICOR-supported studies were those which recognized the importance of addressing community concerns, of strengthening CHW ties with the higher level health system, and of increasing communication between supervisors, CHWs and communities. These studies used or developed a variety of innovative techniques for stimulating greater interaction and discussion

between all the relevant actors in achieving PHC objectives. They found that to improve the performance of CHWs, to make strategies which depend on CHWs more sustainable, and to make CHWs more accepted and utilized by their communities, solutions needed to reinforce these linkages.

### C. The Value of Operations Research for Solving Problems in the Use of CHWs

The operations research approach followed by PRICOR-supported investigators helped them to take into account CHW, community and health system factors in developing locally appropriate solutions. The experience of many of the studies with the use of heuristic techniques which facilitated communication and negotiation between researchers, health professionals, CHWs and community members, demonstrated that seeking wider input into decision-making about CHWs does enhance the feasibility and acceptability of solutions to complex problems. These techniques were used with a wide variety of participants - ranging from mothers, teachers, traditional healers, auxiliary nurses to district medical officers and Ministry officials - and proved to be useful approaches for bringing in different but relevant points of view, building a sense of ownership of solutions, and creating consensus about the most workable solution. Heuristic techniques such as nominal group process, interaction matrices, multiple criteria utility assessment, and systems diagrams were used successfully and in most cases appropriately to better understand problems and generate and evaluate potential solutions. Although this paper did not attempt to fully describe the applications of these techniques in solving problems in the use of CHWs, the value of operations research in directing researchers to consider the input of "decision-makers" at varying levels should be noted.

While the operations research paradigm which PRICOR-funded researchers attempted to follow was useful, it must be recognized that the studies on CHWs funded by the PRICOR I Project were often too long and involved too much data collection and analysis to rapidly yield results for management decision-making. Clearly, more responsive and timely research methods are needed if operations research results are to be useful. In light of the fact that research on CHWs is complicated by social factors and does not neatly lend itself to tightly circumscribed analytical models, this means that research methodologies are needed which permit researchers to objectively and systematically understand the many factors affecting the success of PHC strategies that rely on CHWs. Analytical tools must be developed to enable researchers to measure more precisely the inputs, operational processes, outputs, effects and even impacts of CHW service delivery activities.

The methodological approach now being developed by the PRICOR II Project aims to meet this need. The use of systems analysis to document objectively measurable indicators of service delivery performance will help researchers better understand how PHC services are delivered and how they can be improved to achieve greater impact on health. It may be expected that future advances in operations research on service delivery at the community level - which will often involve some type of community health worker - will increasingly rely on more micro-analytic techniques.

In addition to the locally defined problems that they solved, the studies supported by the PRICOR I Project represent an important first step towards the development of practical operations research techniques to solve critical service delivery issues. Much has been learned from these efforts that will guide future work in developing flexible and responsive operations research methods for application to primary health care systems.

## **APPENDIX A**

### **Summary of PRICOR-Funded Studies on Community Health Workers**

## APPENDIX A

## SUMMARY OF PRICOR-FUNDED COMMUNITY HEALTH WORKER STUDIES

## STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS

STUDY	SUBJECTS ADDRESSED	PROBLEM	OBJECTIVE	PROPOSED SOLUTION	RESULTS	COMMENTS
Bangladesh/ Chowdhury	CO, CHW	Underutilization of "modern" PHC services; widespread use of unqualified practitioners	Improve use of PHC services by identifying provider and patient characteristics that influence utilization	Increase ratio of PHC providers to population; extend service hours; provide some services in patients' homes	Proposed solutions not yet implemented	PI expects to implement changes in PVO program upon return to Bangladesh.
Benin/ Coit	CF, CHW, CO	Need to develop CF system for new PHC services to complement government and donor financing	Identify, implement, and monitor community financing methods for PHC	Pricing and revenue management system; fees to be charged by episode	Schemes were instituted in study villages and cover approximately one third of direct and indirect PHC costs	Non-residents charged 4 times the resident fee--an important revenue-generating technique
Bolivia/ Gonzalez	CF, CHW, CO	Very high CHW attrition rate in Cochabamba, thus decrease in PHC coverage in rural areas	Reduce high attrition rate and thus increase PHC coverage	New, lower paid, CHW cadre; periodic collection of potatoes from community residents to finance CHW salaries and medications	Six promotoras trained and working without pay pending first potato harvest in June	Due to Bolivian hyperinflation, revenues from sale of in-kind payments will be changed into dollars.
Brazil/ Baker	CF, CHW	See Comments	Analyze FSESP experience with CHWs and community financing of water supply	See Comments; job security, stable salaries, system support found to contribute to CHW stability and effectiveness	CHW information system found to be weak; revisions based on study results implemented	This was a retrospective study not directly intended for problem analysis and solution development.

**COMMUNITY HEALTH WORKER STUDIES**  
**STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

STUDY	SUBJECTS ADDRESSED	PROBLEM	OBJECTIVE	PROPOSED SOLUTION	RESULTS	COMMENTS
Brazil/ Nations	ORT, CHW, CF, CO	Use of ORS is low, even though caretaker awareness and knowledge are high.	Train and incorporate traditional healers into the ORT delivery system	Training curricula and method for generating interest about ORT among traditional healers	Solution successfully implemented, will be partially replicated in major regional project	Healer participation in solution development an important factor in success; study also produced cost data (not yet available)
Ecuador/ Luna Acosta	CHW, CO	Weak supervision, irregular provision of supplies, inadequate training of CHWs	Study CHW supervision, logistics, and training subsystems; propose and test improved strategies to resolve specific operational problems	Well-defined supervision scheme with standardized guidelines; decentralized supply distribution integrated with supervision; decentralized training strategy with improved curriculum and more practical experience	Supervision scheme implemented in 4 provinces; evaluation showed higher CHW productivity compared to control province; decentralized supply distribution and training strategy not yet implemented	Proposal to implement pilot test of training strategy awaiting MOH approval
Haiti/ Augustin (AEDC)	CF, CHW, CO, ORT	Uncertainty about how to tap local resources for sustaining CHW preventive services	Develop ways to motivate CHWs to teach mothers to understand and use preventive services; establish supportive CF mechanisms	Adaptation of traditional rotating credit clubs for mothers who demonstrate competence in child survival interventions	First groups of mothers learned interventions and participated in schemes; portion of funds generated used to pay CHW salaries	Scheme only recently implemented

191

**COMMUNITY HEALTH WORKER STUDIES**  
**STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

<b>STUDY</b>	<b>SUBJECTS ADDRESSED</b>	<b>PROBLEM</b>	<b>OBJECTIVE</b>	<b>PROPOSED SOLUTION</b>	<b>RESULTS</b>	<b>COMMENTS</b>
Haiti/ Augustin (Eye Care)	ORT, CHW	CHW has only 12 hours per week for promotion and home visits	Determine optimal use of CHW time for promoting 4 key PHC interventions, including ORT; increase caretaker competence in these interventions	Alternative strategies for CHW time allocation, including targeting of high-risk mothers for ORT and family planning. Group and individual training of mothers and CHWs. Mothers' improved competence linked to rewards for mothers and CHWs.	Preliminary results indicate that the more precisely targeted strategy has been more efficient. Targeting of high-risk mothers appears to have helped ensure CHW outreach in the communities.	Study dealt with allocation of only part of CHWs' time, the rest being fixed on other assigned tasks.
Haiti/ Boulos	CHW, CO	Despite previous training of traditional birth attendants (TBAs), maternal morbidity and mortality remain high.	Determine best way to train TBAs and involve them in maternal care system	Use shorter, more cost-effective, initial TBA training program, and stress more frequent in-service training; use morbidity/mortality case study approach to identify other maternal care system changes needed to prevent similar cases	Shorter training course instituted at Cite Simone	Cite Soleil provides good population-based PHC program to study such issues and determine impact.
Haiti/ Cayemittes	CO, CHW, ORT	Very high diarrhea-related morbidity and mortality among children under 5	Promote effective use of ORS among children by mobilizing existing community organization; develop acceptable ORS formulas for home mix; improve marketing of ORS packets	Community organization strategy in combination with ORT intervention using network approach; identification of factors responsible for poor acceptance	Level of community interest determined; appropriate ORT modules developed and field tested; implementation period was short; change measured in KAP but not in health status.	

**COMMUNITY HEALTH WORKER STUDIES  
STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

<b>STUDY</b>	<b>SUBJECTS ADDRESSES</b>	<b>PROBLEM</b>	<b>OBJECTIVE</b>	<b>PROPOSED SOLUTION</b>	<b>RESULTS</b>	<b>COMMENTS</b>
India/ Elkins	CF, CHW, CO	Limited resources require voluntary agencies in India to find most effective ways of financing, organizing, and managing community-based PHC programs.	Study financial, organizational, and managerial aspects of 8 health cooperatives; describe various solutions that cooperatives had already developed	8-2 Comments	National workshop held to discuss findings with other agencies and voluntary programs; arrangements made to institutionalize information sharing. Policy decisions taken by Institute of Rural Management (Anand) to include training in management of rural health programs in curriculum, place interns in projects.	This was a retrospective study not intended for solution development.
Jamaica/ Desai, Zachariah	CF, CHW	Low PHC team productivity in health centers due to: (a) inappropriate manpower allocation; (b) health center schedules not based on demand for services	Improve health center productivity	Microcomputer model to optimize productivity by reallocating clinical personnel, restructuring clinics, and relocating health centers	Application being tested in Cornwall County	Model has shown that personnel costs can be reduced, while at the same time actually increasing number of services delivered and population covered with essential services.
Korea/ Hong	CO, CHW, CF	Inadequate preventive and promotive health activities in rural areas; community health practitioners are clinic-based and provide mainly curative care.	Strengthen community understanding and support for preventive and promotive health activities; analyze cost-effectiveness of various strategies for involving non-health community organizations in PHC.	Training of CHWs and community leaders in prevention and health education; health education presentations at community meetings	Leaders trained but community interest still low.	Study generated considerable cost data.

631

**COMMUNITY HEALTH WORKER STUDIES**  
**STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

STUDY	SUBJECTS ADDRESSED	PROBLEM	OBJECTIVE	PROPOSED SOLUTION	RESULTS	COMMENTS
Mexico/ Ramos	CHW, CO	CHWs in State of Mexico respond inadequately to specific local needs. They are overburdened with too many tasks and lack means for setting priorities. Tasks assigned uniformly, despite varying community conditions.	Improve congruence between CHW activities and local needs	Train CHWs and their supervisors in community diagnostic techniques; reduce scope of CHW job description and introduce community participation in setting priorities	Test of solution now underway. Public health physicians in state being trained to introduce process in own areas.	
Nigeria/ Gray	CHW, CO	Extremely high CHW attrition rate, believed due to inadequate incentives and weak community utilization	Explain high attrition rate and develop appropriate responses	Several methods to reduce attrition by providing monetary and non-monetary incentives and responding better to community preferences	CHW role and tasks changed	Solution to be introduced gradually and tested over next 5 years
Nigeria/ Ojofeitimi	CHW, ORT	Poor CHW coverage, partly due to inadequacies of current supervisory practices	Strengthen CHW effectiveness by improving supervision	Training for supervisors; guidelines/protocols for supervisory visits	Guidelines/protocols developed; recommendations and draft supervisory protocols presented to MOH, UNICEF, and WHO. Field test of solutions proposed to MOH.	

**COMMUNITY HEALTH WORKER STUDIES**  
**STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

STUDY	SUBJECTS ADDRESSED	PROBLEM	OBJECTIVE	PROPOSED SOLUTION	RESULTS	COMMENTS
Liberia/ Cole II	ORT, CHW	Mothers often seek treatment of their children's diarrhea only after severe dehydration has occurred.	Develop and field test method for teaching caretakers about diarrhea and ORT, building on existing caretaker practices	Train health workers to train mothers in home-based ORT; CHWs to reinforce healthful practices and discourage harmful ones	Three CHWs and two traditional birth attendants trained to deliver ORT and train mothers in their homes. Local schoolteacher has also trained 70 students in ORT.	Study jointly funded by CCCD (Phase I) and PRICOR (Phases I and II).
Liberia/ Moore, Wall	ORT, CO, CHW	High diarrhea-related morbidity and mortality in areas which have no CHWs	Use school children to educate families about health, using curriculum consistent with tasks adolescents currently do (as verified by community)	Train local schoolteachers to train students, using 8 health modules	Trained 160 children from 4 schools; early results indicate students practice some of what they learned and discuss modules with mothers, siblings, and friends	
Malawi/ Chizimbi	CO, CHW	Lack of PHC worker accountability to community, lack of community participation, ineffective village health committees	Identify approaches that promote successful implementation of community-based PHC activities	Not yet developed		Study delayed by conflicting responsibilities of MOH researchers

**COMMUNITY HEALTH WORKER STUDIES  
STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

<b>STUDY</b>	<b>SUBJECTS ADDRESSED</b>	<b>PROBLEM</b>	<b>OBJECTIVE</b>	<b>PROPOSED SOLUTION</b>	<b>RESULTS</b>	<b>COMMENTS</b>
Papua New Guinea/ vor der Bruegge	CHW, CO	PHC services not very accessible and largely curatively oriented	Reorient systems toward community and add emphasis on preventive and promotive activities	Train trainers of peripheral providers to involve villagers in decisionmaking relating to service provision	Solution implemented	Approach now used in additional areas under Church Health Service jurisdiction
Peru/ Spira, Skillicorn	CHW	Community health workers not supervised; no functioning information system	Test feasibility of CHW acceptance of micro-computer systems	Training of health workers to use lap computers to guide them in their tasks	Pilot test with 10 CHWs showed improved information system and improved project management	
Philippines/ Lantican	CHW	Inadequate performance of barangay health workers (BHWs) on national scale	Improve BHW selection strategy; improve BHW training methods	Test possible psychological criteria for BHW selection; modify existing training programs	BHW K,A scores improved; communities more aware of BHWs	BHW scores continued to rise 10 months after training. Although psychological criteria showed useful traits, in practice nearly all volunteers were accepted for BHW positions.
Philippines/ Loyola	CHW	Lack of effective barangay health worker (BHW) nutrition program	Improve BHW nutrition skills	Improve nutrition training modules and increase community awareness of nutrition training programs	Improvements in nutrition KAP of both CHWs and mothers. Use of nutrition services rose briefly, then fell, in 2 study areas but continued to improve in third site.	New training module ordered by MCH Nutrition Service

**COMMUNITY HEALTH WORKER STUDIES**  
**STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

STUDY	SUBJECTS ADDRESSED	PROBLEM	OBJECTIVE	PROPOSED SOLUTION	RESULTS	COMMENTS
Philippines/ Osteria	CF, CHW, CO	Economic conditions preclude scale of public sector financial expansion needed to provide health services to rural areas	Mobilize community resources for PHC, including prevention	Community-managed and -financed revolving drug funds; emergency hospitalization fund; "lead mothers" scheme	Five community pharmacies still functioning in the black 9 months after study completion; little support for "lead mother" preventive activities	Community involvement considered essential for project success
Senegal/ Gray	CHW, CF	Overdependence on external sources for PHC financing	Recommend measures to wean Sine Saloum project from AID support; examine possible (particularly community) sources of funding for PHC recurrent costs	Recommendations for future OR in areas of supervision, CHW remuneration, drug resupply.	USAID/Dakar has requested technical assistance in developing supervision OR agenda.	
Swaziland/ Dunn, Dlamini	CHW, CF, CO, ORT	MOH cannot afford to pay rural health motivators (RHM) more than very small monthly stipend; community unwilling to support RHM preventive services; RHM task specification ambiguous.	Improve scope and quality of RHM services; identify most appropriate way of sustaining them through community financing	Refresher courses (including home-based ORT) for RHMs, so their services are better appreciated by community and generate in-kind (food or labor) payments for RHM	Chief assigned field to RHM & community to prepare land for planting. Community did so, but due to external circumstances, too late for planting. Community will repeat in time for next planting season. Small (n=64) evaluation showed that 95% of respondents knew of ORT and 35% knew correct formula.	MOH area superior of RHMs trying to expand approach to second chieftianship

**COMMUNITY HEALTH WORKER STUDIES  
STUDY PROBLEMS, OBJECTIVES, PROPOSED SOLUTIONS, AND RESULTS**

<b>STUDY</b>	<b>SUBJECTS ADDRESSED</b>	<b>PROBLEM</b>	<b>OBJECTIVE</b>	<b>PROPOSED SOLUTION</b>	<b>RESULTS</b>	<b>COMMENTS</b>
Tanzania/ Mtango	CHW, CO	Inadequate supervision of CHWs	Strengthen CHW effectiveness by improving supervision	Structured participation of community leaders in supervision of CHW, jointly with MOH technical supervisor; increased resources, improved mgmt. tools for supervision at MOH	Reorganization of supervisory system; important result was involvement of communities in decision-making about CHWs	
Thailand/ Kraisid	CHW, CO	CHW supervision infrequent and limited to control/evaluation	Develop alternative approaches to supervision	Four province-specific supervision models		Community supervisory input deemed essential for all four models
Thailand/ Orathip	RG	Inadequate PHC financial resources	Identify, test, and replicate cost-effective models of community financing for PHC activities	Combination of (1) revolving fund mechanisms based on existing PHC funds; (2) multipurpose models; and (3) multipurpose models with health cards	Thai government has (1) adopted multipurpose model for National Rural Development Program; (2) encouraged single-purpose funds to diversify; and (3) encouraged establishment of multipurpose funds.	Multipurpose model more cost-effective and sustainable
Uruguay/ Ebole	CHW, CO	Environmental and other preventable health problems in peripheral urban (Montevideo) neighborhoods; weak MOH services with little preventive activities; no catalyst for community action	Improve neighborhood environment and resolve problems through community action	Form health committees and train volunteer promoters to serve as catalysts for community action	Communities organized and promoters trained in 3 neighborhoods; resulted in several community actions and increased public awareness of health problems	Six months after study was completed, promoters and committees were still functioning, although long-term sustainability is uncertain

**APPENDIX B**

**Abstracts of PRICOR-Funded  
Studies on Community Health Workers**

99

## DETERMINANTS OF HEALTH CARE UTILIZATION IN RURAL BANGLADESH

The problem of under utilization of primary health care (PHC) services in Companiganj upazilla (sub-district) in Bangladesh was the subject of an operations research study carried out jointly by The Johns Hopkins University and the Christian Commission for Development in Bangladesh (CCDB). In rural areas of Bangladesh, the PHC program and other organized health care projects function parallel to, and often in competition with, many alternative health care providers. Although government PHC services are free and managed by trained professionals, many rural people prefer these alternative providers (private physicians, traditional healers, etc.) to the formal government systems. This results in under utilization of government PHC facilities, despite tremendous health needs and repeated efforts by the government to improve its services. The goal of the study was to identify changes that could be made in the existing PHC system so that utilization would be improved.

The Companiganj Health Project (CHP) was a demonstration model for delivery of comprehensive health and family planning services carried out from 1973 to 1980 as a joint venture between the Government of Bangladesh and CCDB. All services were delivered almost free of cost according to the policy of the government. Curative services were delivered in two well-equipped hospitals (main centers) and seven sub-center clinics. Preventive and promotive services were delivered by two sets of community health workers (CHWs), male and female, who made routine home visits.

In order to analyze the problem of under utilization of PHC health services, the researchers examined three sets of data: 1) birth records, 2) death records, and 3) major causes of morbidity records. For each event, socio-demographic background of the individual, the nature of the illness, and health care service utilization patterns were given special attention. A series of bivariate and multivariate analyses of the data were done, with utilization of health care services and choice of service providers as the dependent variables and a set of user and health system factors as the independent variables.

The results of these analyses provided some predictors of utilization of health services. The major predictors were found to be age of the patient, socioeconomic status of the family, season, and total number of health care providers available in the community. The winter and rainy seasons were associated with decreased utilization of health care services, despite the fact that those were periods of highest morbidity. The presence of many health care providers in the community was associated with increased utilization of health care services. The only other health system factor that had some positive correlation with utilization of health care services was home-visiting by a female CHW.

The patient's choice of health care provider was also examined. Modern medicine was found to be the preferred source of care for 75 percent of the patients who use medical services. However, this care is provided primarily by unlicensed, semi-trained or self-trained practitioners called Daktars. Stated preference for a

particular provider did not predict actual utilization during illness episodes. For example, 42 percent of patients report that they prefer to use formal PHC services, while only 25 percent actually use them. Fifty percent of individuals under study were seen by Daktars, 25 percent went to PHC facilities, 16 percent were seen by traditional practitioners, and 9 percent went to homeopaths. Children under 5 were seen by traditional practitioners and homeopaths significantly more often than the higher age groups.

A comparison of some aspects of service delivery between the Daktars and the PHC services showed that in terms of availability and accessibility, place of treatment, travel and waiting time, and type of medications dispensed, the Daktars' services are more attractive to the villagers than the PHC services. Only in terms of cost of treatment are the PHC services more attractive.

Community members, health care providers, and local officials participated in solution development through a structured group process that elicits information from informants through questionnaires (Delphi technique). The participants completed questionnaires aimed at identifying the components of the under utilization problem and obtaining suggestions regarding solutions. Based on the results from this initial questionnaire, a revised questionnaire was developed and distributed to the same participants. This process continued for four rounds until consensus had been reached on some alternative solutions to the problem. The participants of the survey identified two major problems areas, non-availability and non-accessibilities of PHC facilities at the time of need, and communication gap between the provider of PAC and the community to be the major reason for under-utilization.

Recommendations from the participants in the Delphi survey for improving utilization emphasized the need for at least one PHC clinic per population of 5,000. Clinic hours should be extended to include both morning and evening hours, and PHC workers should be willing to treat emergencies and acute episodes of illness if the need arises even after hours. Other recommendations include improvement of supplies, changes in the orientation of the PHC clinics, change in the staffing including appointment of TBAs, increasing awareness of the public about PHC services and the establishment of proper quality control.

The researchers then took the variables that were found to be predictors of utilization and choice of provider from the problem analysis and categorized them into constraints, facilitators, and decision variables. In light of these, various components of the existing PHC system were analyzed and specific problems were identified. These, along with the results of the Delphi survey, were used to develop program recommendations. These recommendations included: a) establishment of a PHC clinic in every ward (approximately 7,000 population), b) selection of an accessible site by community residents and PHC officials, c) staffing of the clinic by paramedics and traditional birth attendants, d) extended clinic hours, and e) consideration of minimal fee-for-service charges to provide incentive to health workers.

\* \* \*

This study was conducted from June 1985 through March 1986 by the Johns Hopkins University School of Hygiene and Public Health. Further information is available from the principal investigator, Dr. A.T. Shafiq A. Chowdury, Johns Hopkins University School of Hygiene and Public Health, Department of International Health, 615 N. Wolfe St., Baltimore, Maryland 21205, or from Ms. Lani Rice Marquez, PRICOR study monitor (Chevy Chase).

## Study Abstract

No. 17, November 1986

COMMUNITY FINANCING OF PHC SERVICES IN THE  
PAHOU HEALTH DEVELOPMENT PROJECT, BENIN

An operations research study was conducted by the Unitarian Universalist Service Committee in the People's Republic of Benin during 1983-85 to develop a community financing strategy to support the Pahou Health Development Project's primary health care (PHC) system. After considering several viable alternatives, the project managers proposed two financing strategies to the families living in the 15 villages that constitute the communes of Pahou and Avlekete: fee per episode for curative treatments, with prices marked up to cover other costs, and a prepayment insurance-type scheme that would give them free access to PHC services. Even though it had been expected that both options would be selected, the families all chose to pay the fee per episode. Families explained that even though they recognized that they would benefit from a prepayment scheme, they could not afford to make the annual (or even semiannual) payment in advance. Only the 11 members of the health staff chose the prepayment scheme for their families.

With the agreement of the community leaders, the revenue generated from the payment of curative care was used to cover the costs of drug supplies and village health worker (VHW) remuneration. The investment costs were supported by foreign donors with the understanding that the operating costs would be financed by the Beninese government (health center staff salaries and infrastructural costs) and by the communities.

Standing orders guide VHWs and health center staff in diagnosis and treatment and in determining what fee to charge the patient. The treatment fees charged by health centers and VHWs are standard throughout the project. The base treatment charge is the cost of the drugs involved in the treatment plus a percentage to help cover operating costs. This markup was calculated by estimating the number of cases of the disease and thus the proportion of personnel time devoted to the treatment. This calculation was then used to determine the percentage of the operating costs to be added to the drug costs. In addition, a proportion of total preventive care costs (e.g. pre/postnatal care, vaccinations, and home distribution of Oralyte) are included in the price of curative care. The reduction in drug costs as a result of using generic drugs makes it possible to mark up the treatment prices so that they cover other costs (besides drugs and VHW remuneration) and yet remain affordable and acceptable to the population.

People seeking curative care pay for the entire treatment at their first visit, regardless of the number of followup visits. Curative care and preventive interventions are administered free to school children and indigents. Treatment prices have been quadrupled for those people residing outside the project area who wish to use project services. In addition to increasing project revenue, this helps limit the influx of "outsiders" and prevents them from coming to obtain project drugs to resell for a profit elsewhere. The "outsider" treatment prices are also applied at the health center to people living in the project area but whose VHW has not referred

102

them to the health center, supporting the VHWs and increasing their credibility by ensuring that people follow the established procedures.

A considerable effort went into managing and sustaining the community financing system. Both the health center staff and the VHWs received training in resource management and logistics. The head nurse of the health center also received inservice training in bookkeeping by an accountant who regularly goes over the health center and VHW accounts of the cash box. Control of cash box transactions (collection of receipts and of incurring expenses) is the responsibility of a sub-committee on financial management of the Commune Health Committee comprised of three community leaders and the health center's head nurse. In addition, biannual evaluations of coverage levels achieved are carried out by the health center staff. These results, discussed with the Commune Health Committee, have led to readjustments in the prices of certain treatments. Supervisors also use the receipts to compare the amount of drugs used and revenues collected with drug stocks and expected revenues. When nurses' or VHWs' receipts are lower than they should be, this amount is deducted from the responsible person's remuneration.

The revenue from this financing system has assured 90-100 percent accessibility to services for the entire population (defined as living within 2 kilometers of service delivery locations) and a VHW attrition rate of less than 7 percent in 3 years. Between July 1983 and June 1985, receipts from community members registered in the project were able to cover 40-50 percent of the following recurrent costs: replenishing of drugs, remuneration of VHWs, petrol for supervision and mobile maternal and child health clinics, maintenance of the health center, and the information system at the village level (VHW treatment forms, home visit forms, pre/postnatal forms). When "outsider" receipts are included, 60-80 percent of these costs were covered. In the second half of 1985, total revenues generated from curative treatments were able to cover all of these expenses.

The cost analysis was based on a series of studies of utilization, personnel time (work-logging), and resource utilization (logistics records). The preliminary results (July 1983 through June 1985) showed an average cost of \$4.75/capita per year, including all recurrent costs, annual amortized capital costs, and a yearly portion of costs of startup activities amortized over ten years. These costs represent real project costs, including consultants, extra training for project staff, time for research, and training of student midwives by the health center staff. Estimated recurrent service costs come to \$2/capita per year.

In conclusion, to become self-sufficient, a community financing system needs at least 2 years of good management (routine monitoring of coverage and strict accounting). Further, a community financing system operating only at the village level should not expect to cover the costs of drugs, VHW remuneration, and such support services as supervision. The study showed that only 25 percent of project revenues came from village-level treatments (including "outsider" receipts). However, further study might reveal other ways of generating revenues and organizing service delivery to allow self-sufficiency at the village level.

\* \* \*

This study was conducted by the Unitarian Universalist Service Committee (UUSC) from April 1983 to December 1985. Further information is available from the principal investigators, Dr. Eusebe Alihonou, B.P. 1822, Cotonou, Benin, or Ms. Elizabeth Coit, UUSC, 78 Beacon Street, Boston, Massachusetts 02108, or from Ms. Marty Pipp, PRICOR study monitor (Chevy Chase).

## Study Abstract

COMMUNITY FINANCING TO REDUCE ATTRITION OF  
COMMUNITY HEALTH WORKERS AND INCREASE  
HEALTH SERVICE COVERAGE IN RURAL COMMUNITIES

Researchers from the Instituto de Investigaciones Médico Sociales (IIMS) undertook an operations research study to find ways of reducing attrition rates of community health workers, or Sanitarios Nativos (SNs), in Cochabamba, Bolivia. The objectives of the study were to identify both the conditions under which a community would be willing to support a health worker, and feasible financing schemes that would provide stable salaries for the SNs. Preliminary results show that villagers are willing to pay in kind for health worker salaries provided the workers are reliable and work exclusively in their own communities. Since the total revenue from these in-kind payments would cover only about half the SN's current salary, the researchers concluded that stable, community-supported health workers could be provided only by training and deploying a lower level health promoter at a reduced salary level to be determined by the community. This scheme would also allow for the expansion of services into areas where no formal services had previously been provided.

In order to determine how best to manage these in-kind payments, project investigators worked with community groups and individuals and held open community discussions. After several sessions the project investigators were able to propose the following scheme: the quotas (in the form of either wheat or potatoes) will be collected in May after the harvest. The quota is roughly equivalent to US\$ 7.00 per family regardless of the family's land holdings. The organization and collection of the quotas rely on two community organizations: the sindicato and the health committee. The sindicato, a traditional and highly visible organization in rural communities, is an ideal collaborating organization because it exists in each community and attendance is obligatory for each family head. Each sindicato director in the study area supports the project and will be responsible for ensuring that each family pays its quota. Furthermore, each sindicato has elected a member to serve on the second collaborating organization for this scheme, the health committee. This group, composed of the representative from the sindicato and an elected mother, will be directly responsible for the collection, storage, and marketing of the in-kind payments. The overall scheme will be supervised by two Bolivian physicians who work with INEDER, a Dutch private voluntary organization (PVO).

The scheme, already implemented in seven communities, involves retraining the existing SN to provide better services and to supervise six promoters located in satellite villages. Promoters differ from the SN in that they are generally older mothers, with little or no education, who will receive half the salary of the SN for the same time worked. The SN's longer training, and his previous year's work experience in the health post, partially explain the pay differential.

Training and supervision of the promoters is conducted by the research staff and the two Bolivian physicians who supervise the overall scheme. Bimonthly training focuses on specific health topics such as ORT, first aid, or sanitation. The worker is provided with pamphlets that include illustrations to reinforce important points. Supervisors visit once a month and review workers' records and meet with the community organizations responsible for the management of the health workers' salaries.

A signed contract between the Ministry of Health (MOH) and INEDER guarantees continuity of this project's personnel, and institutional support, for at least 3 more years. Dissemination of the project's results has been accomplished through several meetings with the MOH and PVOs working in the Cochabamba area. Two PVOs (IDEPO and Project Tirague) hope to use the results from the PRICOR study to expand the model.

\* \* \*

This study was conducted from October 1984 through March 1986. Further information is available from the principal investigator, Dr. René González, Director, IIMS, Casilla 4444, Cochabamba, Bolivia, or from Ms. Karen Evalyn Johnson, PRICOR study monitor (Chevy Chase).

---

**Study Abstract****THE USE OF VISITADORAS AND  
FINANCING OF COMMUNITY WATER SUPPLY**

Researchers from the Fundação Serviços Especiais de Saude Publica (FSESP) and Johns Hopkins University conducted a retrospective case study of FSESP in rural Brazil. The FSESP is a public foundation started by AID and the Brazilian Government in 1942. It is linked to the Ministry of Health and provides primary health care and water supply services to over 13 million people (approximately 10 percent of Brazil's population). In particular, the study focused on FSESP's work with community health workers (visitadoras) and community financing of water supplies.

This study presents the findings of many earlier operational studies and the resultant changes. The PRICOR researchers believed that primary health care (PHC) planners and workers all over the world would benefit from the documentation of experiences of a highly successful and enduring program of PHC delivery and backup secondary care.

**COMMUNITY HEALTH WORKERS: THE VISITADORAS**

In their study of the visitadora (CHW) program, the PRICOR researchers looked at the role, selection, training, supervision, compensation, total costs, quality of care, coverage, and productivity of the visitadoras. The investigators found that the FSESP visitadora program was directed from the central level and was highly organized. Visitadoras perform a variety of PHC tasks in such areas as maternal health, infant and child health, school health, control of communicable diseases, curative health care, and community education. Selection of young women for the job of visitadora was rigorous and highly competitive and a great deal of effort and resources went into their training and supervision. The visitadoras received regular salaries that were four times as much as the standard minimum salary in Brazil. The monetary incentives and job security made the job of visitadora an attractive employment opportunity for young women in rural areas of Brazil.

Using the data from a 1982 expenditures survey of the regional directorates, the study team calculated annual costs of each FSESP health post. Total annual costs per health post, each of which serves an average population of 1,250 people, were estimated at US\$ 18,208. The training costs for each visitadora were only 0.5 percent of this total. The combined salaries of the visitadora and a sanitary auxiliary, including their social security benefits, accounted for 70 percent of the total costs of the health post.

The costs of direct supervision from the support unit were estimated to be 1.2 percent of the total annual costs of the health post. All of these costs were covered by FSESP with funds from the Government of Brazil. FSESP authorities recognize that the cost of the high quality health services provided by the

visitadora could not be paid by the rural communities served and that government subsidization is required to meet the needs of the "poorest of the poor."

While utilizing the service statistics available for visitadoras, the researchers discovered inefficiencies in FSESP's health information system. Although data collected by the visitadoras and their supervisors were sent to the central level and put on a computer, these data were not analyzed, condensed, or appropriately displayed. Therefore, they were of little use for evaluation or supervision. As a result of the research, changes in the information system were proposed to FSESP officials.

#### COMMUNITY FINANCING OF WATER SUPPLIES

A review of the development of FSESP's system of water supply financing and operation revealed that FSESP has assisted over 1,000 Brazilian communities to install water supply and sewage systems. FSESP has created municipal authorities (SAAEs), with paid employees, to manage the water supply and sewage systems. Where necessary, FSESP provides technical and economic support. This approach has been very successful and many SAAEs have generated surplus cash which has been used to expand the systems.

The methods used to generate capital varied from community to community. The most common methods were subsidies, external financing, community contributions of labor and money, and some combination of these. Most smaller communities' water systems are capitalized through loans from development banks, while loan interest payback, operation, and maintenance costs were met through user charges. Rates for utilization of water and sewage systems were based on the minimum salary in Brazil and thus adjusted for inflation. Rates were set to favor poor users rather than large commercial users.

The PRICOR team discovered that small communities in Brazil are able to pay for both maintenance and operation of water supplies if a suitable financing system is used. In the case of FSESP, the regular payment of water bills by the community was achieved through the efficient management of the water system by the SAAEs and proved to be an adequate financing mechanism for operating costs. The researchers think that expanding water supply coverage depends more on the method and efficiency of billing and collection than on the wealth of the community and the amount of charges for water.

The methods and results of the PRICOR study on community financing of water supplies are being used to evaluate and revise the new national scheme to develop water systems (PLANASA) in Brazil. A survey of the State Water Supply Agencies is being conducted using the same approach used in the PRICOR study. Results of this survey will be compared with those obtained in the PRICOR study.

\* \* \*

This study was conducted from January 1983 to April 1984 by the Johns Hopkins University School of Hygiene and Public Health and the Fundação Serviços Especiais de Saude Publica. Further information is available from Dr. Timothy Baker, School of Public Health and Hygiene, the John Hopkins University, 615 North Wolfe Street, Baltimore, Maryland 21205, or from Dr. David Nicholas, PRICOR study monitor (Chevy Chase).

## Study Abstract

No. 36, November 1986

## MOBILIZING TRADITIONAL HEALERS TO DELIVER ORT

In northeastern Brazil diarrhea is a major source of morbidity and mortality among infants and small children. In rural areas, traditional healers have long been the first source of medical care for children suffering from diarrhea and other illnesses. The healers are available to the community 24 hours a day and work out of a desire to serve their community, without monetary incentives. A PRICOR study showed that these healers can be effective in preventing and treating dehydration and in reversing mothers' harmful health practices, at a very low cost. The objective of the study, conducted by faculty from the Federal University of Ceara and the University of Virginia, was to determine how best to mobilize and integrate traditional healers into the official health system to clinically manage diarrheal illnesses and to deliver oral rehydration therapy (ORT). The study was conducted in Pacatuba, a rural community of about 7,000 near Fortaleza, the capital of Ceara.

In the problem analysis, the researchers sought to understand the social, cultural, and medical systems in which the traditional healers work. Data was collected from surveys on the knowledge, attitudes, and practices of the community regarding the treatment of diarrhea/dehydration and child morbidity and mortality due to diarrheal diseases. Ethnographic analyses were undertaken of the health care delivery system and utilization patterns, and in-depth interviews were conducted to reconstruct patterns of household response to a diarrhea illness episode.

These analyses revealed some interesting findings on the incidence of diarrhea in the region and the possibility of using traditional healers to deliver ORT. First, the infant mortality rate was high, at almost 150/1,000, with over half the deaths due to diarrhea/dehydration. Mothers widely perceived diarrhea as a "fright disease", or other supernatural malady which requires the intervention of the traditional healer. Seventy-seven percent of mothers - representing all socioeconomic strata - first sought a traditional healer in cases of diarrhea. Knowledge of oral rehydration therapy in the community was high, but lack of service providers resulted in low utilization. Finally, mothers experienced serious problems with the modern health care system, including long waits, rationed appointments, extensive travel, and expensive and improperly prescribed drugs.

During Phase II of the study, the researchers worked with traditional healers to develop a strategy to involve them in the promotion and use of ORT. Group meetings were held during which the traditional healers had their first opportunity to share ideas with one another and participate in the formulation of a strategy for incorporating ORT into their healing rituals. They also participated in choosing an ORT recipe that was most acceptable to the target community. Forty-six popular healers in Pacatuba were trained in how to correctly prepare and administer ORS, and to teach mothers how to give the solution to their children at home.

The healers were provided with the basic equipment needed to prepare ORS, including measuring utensils, containers, and water filters. In several cases the community contributed by helping to build "curing rooms," simple mud and thatch room additions on the healers' homes where they could treat patients. A manual for

5530 Wisconsin Ave. • Chevy Chase, MD 20815 USA • (301)654-2550 • Cable URCINTER • Telex 64693

instructing traditional healers was produced with substantial input from the healers, and guidelines were formulated to assess their clinical competency in the identification and treatment of diarrhea and dehydration. Healers were also taught to identify and refer severe cases that do not respond adequately to ORT.

The testing of the strategy began in October 1984, and after 12 months of activity, the impact of the traditional healers' efforts has been dramatic. A comparison of the responses of 204 mothers with children less than 5 years old before the PRICOR study with the responses of 226 mothers after the study showed a highly significant increase in mothers who know about homemade ORS, from 3% to 72% (p less than .001). Over half of the mothers surveyed had used the traditional healers' ORS, with the greatest number among the poorest families. Moreover, the traditional healers' promotion of ORT positively influenced mothers' feeding and medication use behaviours during diarrheal episodes. After the intervention, the number of mothers who believe they should continue breastfeeding during diarrheal episodes increased by 20.5 percentage points (p less than .001) and the number who believe that feeding should continue (not be withheld) increased by 18.0 percentage points (p less than .01). A significant decrease of 25.5 percentage points (p less than .0001) was shown in the number of mothers using expensive, commercially prepared ORS packets. The use of pre-diluted ORS dropped by 11.6 percentage points (p less than .01). The greatest percentage drops in the use of these expensive methods occurred in the poorest neighborhoods, where the traditional healers' homemade solutions enjoyed the greatest increase in popularity. A significant decrease (from 93% to 63%) was also shown in the number of poorest mothers who believe they must give pharmaceuticals to a child with diarrhea/dehydration.

Traditional healers have demonstrated that they are capable of preparing safe salt and sugar solutions and are effective at conveying the value of ORT to mothers. The introduction of ORT through traditional healers did not change villagers' medical beliefs about the causes of diarrhea, but rather strengthened the healers' role in the community by the incorporation of ORT skills.

A cost analysis of the intervention showed that the costs of incorporating traditional healers into ORT delivery is quite low since the healers work without salaries and because the community supplied much of the materials needed to construct the curing rooms. The average cost of constructing a curing room was US\$ 26.22, and equipping it for ORT, US\$ 43.15. The operating expenses for the program, including biweekly supervision, salt, sugar and replacement supplies for preparing ORS, averaged US\$ 71.13 per month. The cost of sugar needed per month per healer was only US\$ 0.48, suggesting that the costs of providing salt and sugar for the traditional healers could be borne by the community.

Based on the successful experience with traditional healers in Pacatuba, the researchers are planning for the incorporation of traditional healers into a new large-scale child survival project that the Federal University of Ceara is implementing in 33 municipios (counties) in Ceara with funding from Project HOPE and AID.

\* \* \*

This study was conducted from March 1984 to February 1986 jointly by researchers from the Federal University of Ceara, Brazil and the Division of Geographic Medicine in the Department of Medicine of the University of Virginia. Further information is available from the principal investigators, Dr. Marilyn K. Nations, Box 485, School of Medicine, University of Virginia Medical School, Charlottesville, VA 22908, and Dr. Maria Auxiliadora de Sousa, Caixa Postal 1674, Aldeota 60.000 Fortaleza, Ceara, Brazil, or from Dr. David Nicholas, PRICOR study monitor (Chevy Chase).

## Study Abstract

### OPERATIONS RESEARCH TO IMPROVE THE SUPERVISION, LOGISTICAL SUPPORT, AND TRAINING OF RURAL HEALTH PROMOTERS IN ECUADOR

Since 1980, the Ministry of Health in Ecuador has trained some 472 volunteer health promoters to extend coverage of primary health care (PHC) services in rural areas. Despite efforts to improve the health promoter program, many operational problems exist that limit the effectiveness of these community-level health workers and contribute to the high dropout rate. In collaboration with the Ministry of Health (MOH), researchers from the Fundación Eugenio Espejo carried out an operations research study from 1983 to 1986 to examine problems in the promoter program and to propose solutions that could be implemented by the MOH. Preliminary analysis of the promoter program identified three basic problem "subsystems" as priorities for operations research: training, supervision, and logistical support of the health promoters.

The study team examined each of the three subsystems to identify specific operational problems impeding the effectiveness of promoters. Due to the commonality of the variables, data for supervision and logistical support were collected simultaneously. A survey of 86 promoters and 139 health personnel who had some involvement in the supervision of the promoters was carried out in six provinces representing the three geographic regions of the country (coast, highlands, and eastern jungle).

Results from the survey indicated that promoters perceived supervisors as only partially efficient in their supervision activities. Supervisors made approximately 15 contacts per year with an average of two to three promoters in their area, but these contacts were not always supervisory contacts. Problems identified by the supervisors were insufficient training and financial resources, ill-defined roles, and inadequate appraisal of their work by the MOH.

Logistical problems the survey identified included lack of regulations regarding supplies, irregular and varied demand for medications, lack of first-aid supplies and materials for community health education, and irregular and inadequate provision of supplies from the provincial level. Aspects of supervision that the researchers could modify to improve supervision included the supervisory agent, frequency of contact, number of promoters per supervisor, content of the supervision contact, and tools used by supervisors. A decision tree was used to analyze the cost and expected effectiveness of various possible supervisory agents. In addition, regression analyses were performed on data from the surveys to determine supervisor characteristics that served as predictors of promoter productivity. Experts and officials from the MOH with decisionmaking powers analyzed these variables to determine the most appropriate solution.

5530 Wisconsin Ave. • Chevy Chase, MD 20815 USA • (301)654-2550 • Cable: URCINTER • Telex: 64693

110

The improved strategy for supervision called for revising norms for the content and frequency of supervisory contacts and designating the auxiliary nurse as the most appropriate supervisory agent. Specific supervisory itineraries and the number of promoters assigned to each supervisor were also specified. A protocol was prepared to guide the auxiliary nurses during the supervisory visits. In addition, checklists were prepared to help the supervisor monitor priority activities of the promoter. To improve logistical support, a supply inventory control form was designed to be used during supervisory visits.

To analyze the training subsystem, the study team reviewed the MOH training modules used for promoters and conducted a survey of promoters. Problems, many cultural, were identified in the training modules. Traditional value systems of the communities have not been adequately incorporated into the health system and promoters were therefore not sufficiently oriented as to how to integrate their activities into the socioeconomic and cultural context of the communities they served. Also, the objectives of the training were unclear and skill requirements for trainers had not been clearly defined. Finally, opportunities for continuing education were inadequate.

To resolve training problems, the promoter course content was modified to better meet community needs. A new decentralized training strategy was also proposed to involve local health personnel and other community resources in the training of promoters and to increase practical experience in the training course.

During the period of PRICOR funding, the researchers conducted a field test of the supervision strategy using a quasi-experimental design with two experimental and two control provinces. Thirty promoters were included in the two experimental provinces. A 4-day workshop was conducted for the promoters, supervisors, and central- and provincial-level decisionmakers in each experimental province to introduce them to the supervision strategy and explain the protocols and checklists.

After a 5-month field test, a post-test survey was conducted to evaluate the supervision strategy. Significant differences were found between experimental and control provinces for variables such as average number of supervisory visits, average time spent with the promoter, contact with community leaders, and visits with promoters to the houses of pregnant women. In addition, supervisors in the experimental villages gave greater support to promoter activities in health education, curative care to children and adults, surveillance of water sources, garbage and human waste disposal, and diarrhea and respiratory disease control. Provision of supplies was significantly better in experimental villages, but funds for medicine remained insufficient.

The solutions developed and tested by the study have been incorporated into revisions to the MOH norms and supervision guidelines. Interest in the new supervision strategy has also been expressed at the provincial and county levels and by other popular organizations. Although the proposed alternative training strategy has not yet been implemented, a field test of the decentralized training strategy has been proposed and is currently under consideration by the MOH.

\* \* \*

This study was carried out from September 1983 through March 1986 by a research team from the Fundación Eugenio Espejo. Further information is available from the principal investigator, Lic. Jorge Luna Acosta, Fundación Eugenio Espejo, Atahualpa 333 y Ulloa, Quito, Ecuador, or from Ms. Lani Rice Márquez, PRICOR study monitor (Chevy Chase).

## ALTERNATIVE METHODS OF MOTIVATING COMMUNITY HEALTH WORKERS

The Ministry of Health of Haiti has adopted a strategy of primary health care (PHC) to achieve the goal of "Health for all by the Year 2000." The success of this strategy depends largely on the ability to recruit and support government health workers, or non-government community health collaborators, who will provide community-based preventive PHC services. The recurrent cost of financing these peripheral-level workers is too high for either the government or private institutions to absorb. Save the Children Canada (AEDC), in collaboration with institutions associated with the Haitian Association of Voluntary Health Institutions (AOPS), conducted a study during the period 1984 - 1986 to examine the best ways of motivating the CHWs to provide preventive services that would encourage mothers to learn about, use, and maintain their competence in child survival interventions.

Given that subsidies from institutions managing the CHW programs were not an acceptable option, the researchers began by identifying alternative community financing mechanisms. These included: (1) funds from the community (fee-for-service at rally posts, contributions from existing community groups, prepayment for services); (2) volunteers; and (3) revenue-generating activities.

Data were collected in community surveys and intensive case studies to better understand the motivation problem and the feasibility of the proposed alternatives. Results from the surveys, carried out in three rural areas, showed that people are not willing to pay for preventive services. Communities perceive curative care as their primary health need and CHWs in the rural areas do not provide curative care. In fact, people perceive health care as a "service" delivered by an outside agency. While people understand the value of health promotion, they expressed no willingness to finance a health care delivery system. Given these constraints, the researchers and consultants then systematically evaluated the options using a multiple criteria utility assessment.

With regard to community funds, increasing revenues from fee-for-service activities at the rally posts (where health services are delivered from mobile units), was not acceptable to local institutions. This option was eliminated because the doctor-oriented, "curative" focus would detract from the four child survival interventions, and it would not generate enough money to regularly pay the CHWs (as demonstrated in Mirebalais). Local community groups often pool resources for special projects. However, most community groups agreed that although they appreciate the work of the CHWs and would like to encourage it, they did not normally have enough funds or community support to use existing funds to regularly finance a CHW. The prepayment scheme was not feasible because people were not willing to pay for preventive health services.

The second alternative for providing preventive services was volunteers. Existing volunteer projects were examined and it was found that they shared the common characteristic of being discrete activities of short duration. None were ongoing activities. Volunteers did not seem a likely source of energy for the preventive health work. The third major alternative considered was revenue-generating activities that would produce enough profit to reimburse the CHWs for their work. The major problem with these activities was that they usually did not provide incentives to the CHW to do preventive services.

The solution the group found most likely to motivate the CHWs to do preventive tasks was a combination of the prepaid scheme, the existing community groups, and a revenue-generating activity. It is based on traditional Haitian credit associations called "cengle" or "solde." In these traditional rotating credit schemes, friends contribute a fixed amount of money each month to a general fund and take turns receiving the entire pool. In the proposed health financing scheme, groups of mothers who can demonstrate competence in the four child survival interventions and whose children are fully immunized and participating in growth monitoring will be eligible to participate. These women, organized in small groups by their natural friendship networks, each pay an annual fee for her health card (which is used to support the CHW). The group decides the monthly contribution each person must make depending on how much they know that person can pay. The monthly contributions are used by the women as in a traditional cengle. However, the real attraction of the health card is not the cengle but the access that the affinity group then has to low-interest loans from the Bureau de Crédit Agricole (BCA) for income-generating activities. The pooled monthly member contributions are matched by a one-time grant from the institution sponsoring the CHW program. This matching grant is used as capital for the loan, kept at BCA. BCA will lend four times that amount to the group for income-generating activities. A counselor from the BCA will help the affinity groups develop feasible projects and a payback schedule. The affinity group is an essential component of the scheme as its cohesion is the reason people will be motivated to continue paying into the fund.

This project appears to have produced favorable results for a number of reasons. Credit schemes such as these are attractive to rural residents because there is great demand for credit, and private-source interest rates are very high. Because low-interest credit is so desirable, there is an economic incentive for the mothers to learn about the health interventions in order to have access to the pooled funds. As the CHW salary is based on the number of mothers who qualify for the health cards, the financing scheme cleverly links the promotion of preventive health interventions with revenue generation. Some of the groups have developed successful income-generating projects. One group bought a mature mango tree from which they will harvest and sell mangos. Another group bought a goat with their loan and have recently acquired another with their monthly contributions.

\* \* \*

This study was conducted from December 1984 through March 1986 by the Alliance pour l'Enfance et le Développement Communautaire, in collaboration with institutions associated with the Association des Oeuvres Privées de Santé. Further information is available from the principal investigator, Dr. Antoine Augustin, Alliance pour l'Enfance et le Développement Communautaire, 3 Ruelle Duncombe, Port-au-Prince, Haiti, or from Ms. Marty Pipp, PRICOR study monitor (Chevy Chase).

## ROLE OF TRADITIONAL BIRTH ATTENDANTS IN MATERNAL HEALTH

Maternal mortality rates in Haiti have remained at the same high levels for the past 10 years despite the implementation of a maternal health care system that incorporates trained traditional birth attendants (TBAs). Researchers from the Complexe Médico-Social de la Cité Soleil in Port-au-Prince carried out an operations research study with the objective of determining the most cost-effective method of training and utilizing TBAs to help decrease maternal and neonatal morbidity and mortality.

Cité Soleil is a slum area with a population in excess of 100,000 located on the outskirts of Port-au-Prince. Several neighborhoods in the area are served by the Complexe Médico-Social de la Cité Soleil, a multipurpose private nonprofit organization. The residents of these neighborhoods are the subjects of the Complexe's extensive health information gathering system which uses community health workers (CHWs) to register all inhabitants on family register sheets, to identify target groups, to monitor health surveillance programs, and to record all vital events. A numeric coding system identifies each individual living in Cité Soleil by neighborhood, sector, family, and CHW assigned to them.

To identify and analyze problems with the current maternal care system, including the TBA subsystem, the investigators collected data from Complexe records and from interviews with TBAs. Data on maternal and newborn health problems were collected from a review of maternity records and neonatal death records, a study of 300 pregnant women receiving pre- and post-natal care from September to October 1983, and the 1983 Cité Soleil census. Health problems found to be common during the post-partum period included hypertension, birth canal laceration, and infections.

From these data, a description of how TBAs fit into the Complexe's maternal care services was prepared. Traditional birth attendants have been provided with special training in safe delivery methods, referral of high-risk cases, general concepts of public health, the importance of pre- and post-natal care, nutrition, and family planning. This training was provided by a public health nurse during a series of 27 sessions. Once all lessons were covered, TBAs were required to pass an examination before being certified as trained TBAs. The tasks specified for TBAs included encouraging pregnant women to attend pre-natal clinics, identifying women with potential complicated pregnancies, educating pregnant women in hygiene and nutrition, recognizing signs of labor, performing routine deliveries, referring difficult cases, and encouraging mothers to practice family planning.

The PRICOR investigators had already determined, based on interviews with 20 TBAs, that this TBA training program was not having the desired impact on maternal mortality and morbidity. TBAs were performing only three of their assigned tasks: encouraging pregnant women to attend pre-natal clinics, performing routine deliveries, and referring difficult cases. Reasons which the TBAs provided for neglecting other tasks were brevity of encounters with pregnant women, fear of being labeled "nosy", and fear of being blamed for complications in delivery.

The PRICOR investigators then proceeded to determine if a shorter, competency-based training program would result in better TBA performance and thus reduce maternal and neonatal morbidity and mortality. Untrained TBAs were selected from the community and divided into two groups. Group I received the standard (27-session) training course and group II received a shorter competency-based (5-session) training course. The new training program to be tested also differed from the current program in that it placed stronger emphasis on recognition of high-risk situations. In terms of nutrition, TBAs were trained to deliver two simple messages: (1) eat an extra meal a day (ante- and post-partum) and (2) give only breast milk to the newborn until age 3 months. The TBAs were instructed to recommend hospital delivery for all high-risk pregnancies.

Group I TBAs were assigned to cover women living in the Boston, Cité Jean Claude, PCS, Brooklyn, and Wharf neighborhoods. Group II TBAs were to cover women living in the Ilene Cité and the TBB neighborhoods. A third neighborhood, with no TBA program, was selected as a control. Because of the Complexe's population-based registry system, the women covered by the two different groups of TBAs could be followed throughout their pregnancies and subsequent deliveries to determine the effects of the two different training programs.

After the TBAs had been trained and had been delivering services in the communities, the researchers interviewed the women in the two groups to determine the presence of risk factors during pregnancy, the utilization of pre-natal, delivery, and post-natal services, and the outcome of the pregnancy. Extensive information was gathered on any infant or maternal deaths. Analysis of the results of these interviews showed that there was little difference in impact on maternal morbidity or mortality between the two training approaches. The only significant difference in TBA practices was that TBAs who had attended the shorter training session referred more high risk women for prenatal care and hospital delivery. Since there were no major differences in outcomes of the two training programs, the researchers decided to implement the shorter, competency-based course in the Cité Soleil health project on a permanent basis. The investigators are now reviewing the results from their analysis of the entire maternal care system and from individual case studies of maternal and infant deaths to determine what other changes in the system would be appropriate to reduce morbidity and mortality.

\* \* \*

This study was conducted by the Complexe Médico-Social de la Cité Soleil from February 1983 through March 1986. Further information is available from the principal investigator, Dr. Carlo Boulos, B.P. 1666, Port-au-Prince, Haiti, or from Dr. David Nicholas, PRICOR study monitor (Chevy Chase).

**COMMUNITY ORGANIZATION IN PROMOTING  
EFFECTIVE USE OF ORT IN HAITI**

Severe dehydration is responsible for one-half of the deaths of children under 5 in Haiti. A 1984-86 PRICOR study, carried out by researchers from the Association des Oeuvres Privées de Santé and the University of South Carolina School of Public Health, addressed the need to extend the use of oral rehydration therapy (ORT) to the rural areas of Haiti, even in villages without a resident agent de santé (health worker). The operational objective of the study was to mobilize existing community resources (formal groups, informal networks, institutions, and leadership) to increase the availability and use of oral rehydration salts (ORS), both packets and home mix, and to ensure appropriate caretaker preparation and administration of ORS. The project site was the Petit Goave Health District in the Western Public Health Region of Haiti.

During the problem analysis phase, a series of overlapping data collection instruments was used to identify the major obstacles to more effective caretaker use of ORT and to set priorities among these problems for operations research. To achieve these two objectives, the study team identified obstacles through: (1) surveys that provided information on household KAP, socioeconomic characteristics, ORS usage levels, willingness of community leaders and sellers to help promote ORS, and existing health facilities and ORT programs in the health district; (2) interviews with residents living at different distances from sales posts; and (3) focus groups. Twenty villages in the district were selected for inclusion in the study.

Solution development began with an analysis of the studies mentioned above. Four priority sub-problems were identified: ORS availability, ORT usage, ORT preparation, and clinical treatment and referral of children with severe dehydration. The study team developed models for each of the sub-problems and presented them to members of the project policy committee (including members of the National Campaign Against Diarrhea). Using a nominal group process, the committee then examined each model and evaluated the variables in terms of both their individual importance and the extent to which they could be manipulated by the decisionmaker. Those variables that passed the tests were kept in the model and others were added at the suggestion of the policy committee. Community-based solution models were developed to address only the first three sub-problems. Based on the process described above, these solutions were then presented for review to the Petit Goave District Health Committee and to leaders in the intervention communities and revised as necessary.

To improve ORS availability, 28 new ORS sales posts were established in the intervention communities. Operators of these posts and operators in villages already having posts were trained in effective procedures for storing, promoting, and selling ORS. To increase the use of ORS and to improve preparation and administration of the solution, a community-based educational strategy was developed and modules prepared to train a wide variety of community leaders to promote ORT. Health workers from the District Health Office trained groups of village leaders in central locations. Agents de santé visited villages to reinforce community participation.

The solution validation phase consisted of five steps: (1) a pre-test of household KAP; (2) training of "agents de santé" (health workers) from the District Health Office to mobilize community leader participation; (3) training of school teachers, traditional birth attendants (TBAs), village leaders, and owners of ORS sales posts to promote ORS; (4) an intervention period of 2 1/2 months (reduced from the originally scheduled 11), during which the trained community resource leaders carried out ORT promotional activities; and (5) a household KAP post-test which was virtually the same as the pre-test.

The study was successful in identifying and developing significant community leadership resources and involving them in the ORT program. It demonstrated that a variety of village leaders could be mobilized and trained to serve as volunteers in a way that could reach a large percentage of a given target population. Forty-three percent of the households in the post-test indicated that one or more of the trained leaders had discussed using ORT with them, in home visits or at community meetings. Due in part perhaps to the limited intervention period, ORT use in the intervention villages did not increase significantly more than in the control villages. However, important gains were registered in the intervention villages in caretaker knowledge of diarrhea and correct preparation and appropriate administration of ORT. The investigators suggest that because of time limitations, not enough attention was given to determining how best these community leaders could be used, nor to linking these efforts to on-going national training programs. They recommend future operations research studies to determine how best each of these community resources could be used in ORT planning and related activities.

\* \* \*

This study was conducted from March 1984 to March 1986 by the Association des Oeuvres Privées de Santé (AOPS) and the University of South Carolina. Further information is available from Dr. Michel Cayemittes, AOPS, B.P. 76, Port-au-Prince, Haiti, or from Dr. William B. Ward, Department of Health Promotion and Education, School of Public Health, University of South Carolina, Columbia, South Carolina, 29208, or from Dr. Jeanne Newman, PRICOR study monitor (Chevy Chase).

AN OPERATIONS RESEARCH STUDY OF FINANCING, ORGANIZATIONAL,  
AND MANAGERIAL PROBLEMS OF COMMUNITY HEALTH PROJECTS IN INDIA

To meet the complex demands of grossly underserved rural populations of India, numerous voluntary agencies have started community health projects in the last two decades. In their efforts to work out effective methods and processes of delivering health care, these projects have had to develop solutions to a number of financial, managerial, and organizational problems. This study, conducted by researchers from the Institute of Rural Management, Anand (IRMA) in India, and U.S.-based Management Sciences for Health (MSH), examined eight such voluntary health projects and identified the most important operational problems they have faced, along with solutions and results achieved.

The study focused on financing, community organization, and personnel management problems. To gather information on the eight health projects, the researchers interviewed the directors and randomly-selected staff from the projects as well as community leaders, practitioners, and a sample of community members in villages served by the projects. Focus group discussions were also held with staff and community members. Case studies were conducted by soliciting information from management and by using currently available service statistics of the projects and literature published about or by the projects. After data analysis, the researchers organized a three-day workshop in Anand for representatives of the eight study projects, other voluntary health projects, the Voluntary Health Association of India, and international donor agencies. The purpose of the workshop was to discuss the priority problems and alternative solutions identified through the study, point to unresolved issues, and make recommendations.

Financing. The PRICOR investigators found that three major approaches had been used to finance the health projects. First, all projects raised some funds and in-kind assistance from outside the community for starting up the project. Half of the project directors felt that external resources were absolutely essential at this point. Second, the projects obtained resources for recurring expenses from a variety of local and external sources. Local sources included donations of land, labor, and buildings; fees for drugs and services; and membership and insurance fees. The government was an important source of external funding. Third, the projects pursued a policy of relentless cost containment. To increase efficiency, the eight health projects used various strategies to economize on buildings, transport, and the purchase and use of drugs. Strategies included using existing buildings; allowing project personnel to own and maintain two-wheeled vehicles; and purchasing drugs in bulk at competitive prices.

The single, most difficult financial problem cited by the project directors was how to achieve greater community self-reliance. In particular, how can projects involve community members in contributing toward the cost of preventive health services which are usually disassociated from current health problems and in developing resources for treating incurable diseases? Local organizations proved to be important resource bases.

Community organization. Based on the experience of the eight health projects, the researchers concluded that starting with previously existing or related community organizations instead of new organizations helped achieve broad coverage more quickly and more easily — at least over the short run. However, the fast and efficient start achieved through existing organizations did not necessarily result in greater breadth of participation in the long run. There is some evidence that a pre-established organization, if it represents only part of the community, may perpetuate restricted participation.

Overall, multi-purpose organizations demonstrated an advantage in breadth of participation, i.e., high percentages of community members who participated. However, in terms of depth of participation (community involvement in project planning, management, and service delivery), only newly organized multi-purpose organizations achieved greater participation. In previously existing multi-purpose organizations, members tended to assume fewer active roles.

In support of multi-purpose organizations, some respondents explained that their projects had achieved wide participation by starting with a strongly felt need in the community, even if that need was only indirectly related to health. On the other hand, adherents of single-purpose organizations warned of potential bankruptcy of multi-purpose organizations, where failure of a single activity could drag down the entire organization.

Community poverty was a real barrier to the projects in achieving broad community participation, but so was wealth. Not only did poor people refrain from joining health schemes, but affluent community members gravitated to private physicians. Serving the entire spectrum of economic strata therefore required, on the one hand, services such as hospital referral to attract the wealthy, and on the other hand, services such as food supplementation and income generation to attract the poor.

Personnel Management. The researchers concluded that turnover and salaries are likely to be lower and dedication higher among locally trained staff as opposed to professionally trained personnel. The experience from the projects suggested that it would be wise to train local personnel to undertake many tasks which would otherwise be performed by professionals. They also felt that those professional staff who are recruited for health projects should learn the skills of the support staff to lessen social distance and reduce dependence. For example, health workers could be allowed to drive and maintain their own two-wheeled vehicles instead of riding as passengers with drivers of more expensive four-wheeled vehicles.

During the workshop, channels for further dissemination of information were identified and plans made for networking among nongovernmental community health projects. The sponsoring institution, IRMA, will distribute the PRICOR study findings widely so that other voluntary health projects facing similar problems might benefit from solutions that have been effective elsewhere. IRMA is also considering proposals to include training in the management of rural community health programs in its curriculum and to provide opportunities for student internships in the management of voluntary health projects.

\* \* \*

This study was conducted from January 1985 through March 1986 by Management Sciences for Health (MSH) in collaboration with the Institute of Rural Management, Anand (IRMA), Gujarat, India. Further information may be obtained in India from Professor D. Nagabrahmam (IRMA), and in the U.S. from the principal investigator Dr. Henry Elkins, Jr., MSH, 165 Allendale Road, Boston, Massachusetts 02130, or from Dr. Jeanne S. Newman, PRICOR study monitor (Chevy Chase).

## Study Abstract

THE STUDY OF PRIMARY HEALTH CARE  
TEAMS IN JAMAICA

Study researchers investigated productivity problems of primary health care (PHC) teams in Jamaica and developed a resource allocation planning model. Trial computations of the model, run for two districts in the Cornwall Region, have provided projections on demand for service, personnel needs, cost of personnel, and clinic hours and configurations. These computations have shown not only that services and population coverage can be significantly increased but that personnel costs can at the same time be decreased.

PRICOR undertook this study at the request of the Health Management Improvement Project (HMIP) whose objective is to improve the delivery of PHC by improving management within the Ministry of Health (MOH). In Jamaica, preventive and curative services are provided by three types of health centers. These centers range from small, simple centers offering few services, to large, sophisticated centers providing full medical and dental services. The centers are linked by a patient referral system and by staff visits from the larger to the smaller centers.

The Department of Social and Preventive Medicine of the University of the West Indies (UWI) and Price Waterhouse Associates, Management Consultants, Jamaica were identified as the research teams. They, together with PRICOR and HMIP, developed a study protocol and four study objectives: (1) to develop a methodology for measuring the productivity and cost effectiveness of PHC teams; (2) to describe how the various categories of personnel in the health center distribute their working time among certain predefined activities; (3) to determine how productive and cost effective PHC teams are now and how these factors relate to coverage of the population with essential services; and (4) to develop strategies to improve productivity and to work with the MOH to implement selected strategies on a trial basis.

Researchers observed 496 randomly selected workers representative of the various types of staff working in health centers (HCs) throughout the country. These observations, part of a work sampling survey, showed that the nonproductive time of health workers ranged from 26 to 66 percent. Based on similar studies done in the private sector, Price Waterhouse (PW) and the MOH expect that nonproductive time should be kept below 25 percent. The PW team developed a productivity index which was determined by comparing the actual output of a clinic to the expected output given the critical work station time available. Analysis showed wide variations in productivity indices, ranging from 30 to 150 percent. A cost index was also determined by comparing personnel cost units used in serving patients to the personnel cost units

allocated to scheduled clinics or HCs. The analysis showed an average cost index of 46 for scheduled clinic hours and of 20 percent for HCs. The low cost indices suggested that there is great opportunity to improve the efficiency of the HCs.

Productivity broadly defined is the effective use of resources. The most expensive resource employed in the PHC sector is manpower. Manpower allocated to an HC is tantamount to creating service capacity. Therefore, such capacity should be based on expected demand for services and on time required to deliver a unit of service. A model was developed that improved productivity through manpower allocation and clinic rescheduling. This model helped to optimize productivity by determining the demand for the major services offered at the health center, based either on projections of ideal coverage or past trends; the mix of services the various clinics at a HC should offer; the number of clinic hours that should be programmed in a year for the various clinics to meet demand; the scheduling of the clinics; the number of each type of personnel that should be allocated to a HC; and the assignment of critical personnel (expensive and in limited supply, such as doctors) to geographic clusters of HCs to maximize their use. Thus the model can help PHC managers adjust their system to make optimum use of available resources. The model also allows a sensitivity testing for each of the variables.

The model is now being tested in two pilot districts in the Cornwall region, where the test will be used to determine the best ways to restructure clinics in those districts and to reallocate personnel. Changes in productivity will be closely monitored over a 6-month period. If the test is successful, the plan is to implement the model nationwide as a dynamic planning tool for resource allocation.

\* \* \*

This study was conducted from June 1983 through March 1986 by the Department of Social and Preventive Medicine of the University of the West Indies, and Price Waterhouse Associates, Management Consultants, Jamaica, with the cooperation of the USAID-funded Health Management Improvement Project in Jamaica and the Jamaican Ministry of Health. Further information is available from Ms. Patricia Desai, Department of Social and Preventive Medicine, University of the West Indies, Mona, Kingston 7, Jamaica; from Mr. Bobby Zachariah, Price Waterhouse Associates, Box 372, Kingston, Jamaica; or from Dr. David Nicholas, PRICOR study monitor (Chevy Chase).

PRIMARY HEALTH CARE PROGRAMS IN KOREAN RURAL COMMUNITIES WITH  
THE SUPPORT OF EXISTING VILLAGE ORGANIZATIONS

Korean researchers used an operations research approach to address the problems caused by insufficient attention to preventive and promotive health activities in rural areas of the Keyonggi Province of Korea. The objective of their study was to contrast the feasibility and effectiveness of Primary Health Care (PHC) programs that use non-health community organizations as support structures.

The researchers initially went into the study areas (three counties in Keyonggi province) and developed good working relationships with community leaders, community health practitioners (CHPs), and officials of local, provincial, and central government. This was accomplished through multiple visits, meetings, telephone calls, and letters. Channels of communication were established between CHPs, the community people, and referral facilities. This set the stage for working closely with the community.

Baseline data were collected through a household survey, analysis of CHP activity records, and surveys that focused on the characteristics of CHPs, community leaders, and the study villages. Several problems related to the health care system, health care utilization, and leadership capacities of the communities were discovered: (1) The emigration of the younger generation to urban areas caused many hardships for those people left in the rural areas; (2) A high birth rate indicated the need for maternal and child health (MCH) and family planning services; (3) The morbidity rate was high and many people were relying on self-diagnosis and purchase of drugs at pharmacies; (4) CHP activities were mainly concentrated on clinic-based medical care services for minor illnesses; (5) Community leaders had limited knowledge about health care and did not serve as good role models for the community in health matters.

Based on these results and those of earlier studies, the researchers wanted to determine if community organization support of community health practitioners would improve the quality of PHC delivery. They decided to test the effectiveness of informal community organizations vs. formal community organizations in this role. In the study areas where CHPs were to work with community organizations, the following interventions were implemented: 1) further training of CHPs with a focus on outreach activities and preventive/promotive care; 2) establishment of better communication between the CHP and the community through existing community organizations; 3) education of community health leaders (CHLs) about the importance of community participation in PHC; and 4) development and training of community leaders to serve as communicators, health educators, motivators, and health care providers.

A quasi-experimental research design (two experimental counties and one control county) was used to test the effects of these strategies. Experimental group I (Yang Pyong county) incorporated Bansang-Hoe (formal village organizations) as substructures for PHC services. Experimental group II (Icheon county) incorporated various informal community groups, such as mothers' clubs, 4-H clubs, church groups, agricultural cooperatives, clan meetings, and development committees, as substructures for PHC services. In the control group (An Sung county), CHPs continued to provide PHC services without the assistance of any community organization.

The first project input in the experimental counties was the training of CHPs in field-based activities through 3-day workshops. After their own training, CHPs trained leaders of the community organizations to serve as CHLs. CHLs and CHPs were later trained to fill out monthly checklists of their PHC activities. The research team also developed educational leaflets with health messages for use and distribution by the CHPs and CHLs.

After the CHLs had been active in the experimental counties for several months, the researchers carried out a process evaluation. One-third of all CHLs in Yang Pyong and Icheon were interviewed, as well as a sample of community residents in both counties. In response to the survey, the CHLs said that they had tried to inform the community about the activities of the CHP and tried to inform the CHP about health problems in the community. They also indicated that they had discussed MCH, family planning, chronic health problems, and health hazards with community people when the topics came up in conversation. The CHLs complained, however, that their new role was not recognized by the community. This discouraged the CHLs from performing the health education and information tasks assigned to them. In response to this problem, the CHPs conducted educational sessions for villagers on the CHLs' role and the study team held a two-day workshop for CHPs to bolster their enthusiasm.

After a period of 15 months, the researchers carried out a final evaluation in order to compare the effectiveness and efficiency of the PHC services delivered by CHPs in the three study counties. Each CHP program was evaluated according to: (a) the effectiveness of the program in terms of selected health and health service indices; (b) productivity of CHPs and CHLs in terms of quantity of services; and (c) efficiency in terms of cost incurred per population served. The comparisons were made using three different methods: simple statistical analysis, a computer simulation technique, and a cost effectiveness analysis.

The major conclusion of the study was that PHC services that incorporate formal community organizations are more effective and efficient than both those that incorporate informal organizations and those that do not incorporate any community organizations. All three methods of data analysis confirmed this general result.

\* \* \*

This study was conducted from January 1983 to January 1986 by the Department of Nursing of Seoul National University. Further information is available from the principal investigator, Dr. Yeo Shin Hong, Department of Nursing, College of Medicine, Seoul National University, 28, Yundeun-Dong, Chongno-Ku, Seouli, Korea, or from Dr. Stewart Blumenfeld, PRICOR study monitor (Chevy Chase).

---

## Study Abstract

### TRAINING ADOLESCENTS TO PROMOTE HEALTH IN LIBERIA

In an operations research study conducted during the period 1984-86, researchers from Cuttington University College and Tuskegee University addressed the problems posed by the lack of formal health services and health workers in much of Bong County, Liberia. The study team recognized that many of the tasks Liberian adolescents perform in their daily lives are health related and that adolescents might be trained to serve as health promoters in their communities. The objectives of the PRICOR study were: (1) to identify ways in which the existing roles of adolescents in the community can be extended to include health promotion; and (2) to develop and test a health education curriculum for adolescents based on existing community health concerns and on adolescents' traditional tasks.

An advisory committee, composed of the PRICOR investigators, a member of the Ministry of Education, a development specialist, and consultants from Tuskegee University, conducted an initial brainstorming session to identify prevailing health problems and the domestic tasks that adolescents perform. The researchers reviewed literature on the health problems identified and their management. Based on these preliminary activities, the advisory committee selected six potential areas for the development of training modules: oral rehydration therapy (ORT) and nutrition, skin diseases, poisons and accidents, oral hygiene, intestinal diseases, and malaria/germs.

In order to determine the appropriateness of the selected health education modules, village chiefs were consulted and a household survey was conducted in four selected villages of Bong County. A total of 320 heads of household were interviewed. The questionnaire was designed to gather data on sanitary conditions, recurring health problems, and the level of health knowledge, attitudes, and practices in the villages. Health problems identified included diarrhea, intestinal worms, malaria, and poor sanitation. Tasks routinely performed by adolescents were identified and included disposing of wastes, sweeping yards, preparing meals, caring for younger siblings, fetching water, and washing clothes. These results confirmed that health education modules based on the six selected topics would deal with community-perceived health problems and build on tasks that adolescents were already performing.

Using the information from the community survey and the brainstorming sessions, the researchers refined the solution to be tested. Teaching modules were developed for each of the selected topics. Constraints, such as time and money, were identified and taken into account in deciding which adolescents would receive the health education modules and who would teach the modules to the adolescents. A second survey of 80 "strategic informants" in the communities collected more information on specific health habits and environmental conditions relevant to the selected health modules. The researchers decided that the health modules would be included in the science

curriculum of 6th grade students (average age 16-17 years) in primary schools. The new health topics would be taught to these students by their regular teachers. It was expected that the adolescents would pass the health information on to their families and other community members. Thirteen teachers from four primary schools were selected to participate in modifying the modules to fit local conditions. In two workshops, one of which lasted 5 days and the other of which lasted 2 days, the teachers were taught how to teach the new health education curriculum and how to improve classroom management. The teachers received a small bonus for the training and the extra work required to teach the modules. After the completion of their training, the teachers began to teach the health education modules as a part of their normal classroom routine. The modules were taught to over a hundred adolescents in the four primary schools participating in the study.

Several different methods were used to evaluate the effects of the project activities on the knowledge, attitudes, and practices of the adolescents. Before each module was presented, the students took a pre-test to determine existing knowledge of the health topic. After the module had been taught, a post-test was given. The pre- and post-tests were then analyzed to assess the impact of the modules on the students' knowledge. In addition, after the modules had been presented, each student was asked to write an essay describing the health promotion activities they had performed in the community after learning the modules. The adolescents were also asked to write at the end of the essay the correct recipe for home-mixed oral rehydration solution. Finally, a brief survey of a few students, teachers, and parents was carried out to determine any actual changes in health practices after the health modules had been taught.

According to reports from these evaluative activities, plus anecdotal accounts from community members, it seems that the students, the teachers, and the mothers have learned the new health curriculum and have begun to use the information in their daily lives. The percentage of correct answers given by the students was substantially higher in the post-test than in the pre-test. The small evaluation survey found that eight of the nine teachers interviewed had actually seen the students apply lessons from the modules. Nine of the 11 parents interviewed said they had received health advice from their child. Seven of these parents reported receiving advice on ORT. Eleven of the 12 students interviewed reported carrying out new health activities after learning the curriculum. Specific activities mentioned by the students included ORT, personal hygiene, home sanitation, malaria prevention, and referrals to the nearest hospital. The Ministry of Education is interested in adopting the health curriculum used in the PRICOR study for their national primary school curriculum plan. The investigators conclude that, by building on their existing roles and tasks, adolescents can be trained to serve as effective health promoters in their homes and communities.

\* \* \*

This study was conducted from April 1984 to March 1986 by Cuttington University College in Monrovia, Liberia and Tuskegee University, Alabama, U.S.A. Further information is available from the principal investigators, Ms. Janet Moore, Cuttington University College, P.O. Box 277, Monrovia, Liberia, or Dr. Paul Wall, Carver Research Foundation, Carnegie Hall, Tuskegee University, Tuskegee, Alabama 36088, or from Dr. Jeanne Newman, PRICOR study monitor (Chevy Chase).

PLANNING AND EVALUATING COMMUNITY FINANCING  
IN LIBERIA

Although considerable resources, both public and private, have been devoted to improving primary health care (PHC) services in Liberia, these services often cannot be sustained when external funding is withdrawn. In response to this problem the Liberian Ministry of Health (MCH), in cooperation with the Christian Health Association of Liberia (CHAL), conducted an operations research study from 1984 - 1985 to develop effective ways for communities to generate funds to finance some or all of their PHC services.

The financing schemes had to satisfy certain conditions: (1) they must cost less than the income generated; (2) a high proportion of the target population (children under 5 and pregnant and lactating women) must use the services provided; (3) a large fraction of households must contribute; and (4) the villagers themselves must be able to sustain the financing scheme(s) developed.

Problem analysis began in January 1984 when three villages were selected to participate in the study. A Health Service Utilization Survey was conducted to generate demographic data on these villages. The survey found that households were headed by older men (age 55+), most of whom were farmers with no formal education, and the average household income was considerably less than the national average of \$280 per year.

In each village the town council and other village leaders met to consider four issues: what health care services would be provided, who the health care provider would be, who would participate, and how much the services would cost. Each village established a village health committee (VHC) to manage the project and chose a member of that committee to be trained as the community health worker (CHW). A major health care concern of the villagers during these discussions was the availability of drugs. A large revolving drug fund at the Kolahun District Health Center was seen as a resource and possible model for revolving drug funds at the village level.

Community leaders in each of the study villages discussed eight alternative financing schemes for generating PHC funds within the community. Each of the three study villages constructed a preference matrix and, on each, the same four schemes ranked highest, although in different order: (1) drug sales, (2) production-based prepayment, (3) community and individual labor, and (4) donations and ad hoc assessment. During a 12-month field test, the villages were successful in partially financing their PHC services through their chosen

schemes. Revolving drug funds were established and managed by the VHC, and monthly supervisory visits to each village were made by the principal investigator or the research assistant. Training and logistical support were provided by CHAL and MOH.

Ad hoc assessment and drug sales were highly successful in raising sufficient funds to establish and sustain village-level revolving drug funds. Ad hoc assessment provided seed money of \$59.00 to \$209.60 in each village, with 75 to 90 percent of the households participating in these assessments. The revolving drug funds have been sustained by means of a 25 percent markup at the village level on drugs obtained from the Kolahun District Revolving Drug scheme. Stocks of drugs have been increased and diversified while drug costs have remained low. Sales revenues per case treated by CHWs range from \$0.27 to \$0.95.

Production-based prepayment and labor in communal rice fields have not yet provided any direct resources for PHC funds but might be called upon if needed. Some community labor has been provided in the fields of individual CHWs, although the CHWs have indicated they prefer to be paid a salary. The assumption by the investigators and village leaders that CHWs would be supported by the traditional application of community labor, as is the case in the compensation of traditional healers, has been recognized as erroneous.

The project's success and replicability have been amply demonstrated by the 10 villages that now participate in the project. Six of these have revolving drug funds, and in another four, CHWs have been selected and are now being trained; plans for revolving drug funds in these four are underway. Additional funds and support raised through community labor, donation, and farm contract work have been applied to the direct support of PHC. The results for those communities participating in the full scheme include locally available health care providers, drugs, and PHC management. The establishment of the village health committees has also provided the framework for continued efforts to improve PHC. Both CHAL and the MOH have agreed to continue their support for these efforts, and the district medical officer will continue to provide supervision.

Adherence to a systematic operations research approach has enabled this project to move successfully from problem identification, through the development and systematic assessment of alternative solutions, to field implementation. The selection of a solution combining multiple financing schemes has allowed participants to contribute to PHC according to their means and has provided a broader base for project success.

\* \* \*

This study was conducted from January 1984 through October 1985 by the Christian Health Association of Liberia (CHAL). Further information is available from the principal investigator, Dr. Andrew Cole, Christian Health Association of Liberia, P.O. Box 1046, Monrovia, Liberia, or from Dr. Jeanne Newman, PRICOR study monitor (Chevy Chase).

## DIARRHEAL DISEASE INTERVENTION IN LIBERIA

In 1985 researchers working in Kolahun District, Liberia, noted that children with diarrhea were being brought to the clinic when they were already 5 to 10 percent dehydrated. This observation was the impetus for an operations research study on the problem of dehydration due to diarrheal disease in selected communities. This study was conducted by the Christian Health Association of Liberia from 1985 - 1986. The objectives of the study were to determine caretaker knowledge, attitudes, and practices (KAP) toward diarrheal disease and to use that information to design a strategy to improve caretaker KAP. The strategy developed was then to be field tested in the study villages.

The researchers first examined the problem of dehydration and reduced it to two subproblems. The first subproblem was the delayed utilization of health facilities for cases of childhood diarrhea. It was hypothesized that this problem could be explained by the lack of basic knowledge on the part of caretakers and the lack of accessible health facilities.

The second subproblem was that many of the practices of caretakers during diarrheal episodes contributed to dehydration. Caretakers often stopped breastfeeding, withheld fluids, and gave inappropriate medications.

To analyze the problem of dehydration further, the research team conducted a survey of caretakers in 30 villages in Kolahun District, using a two-stage cluster sampling method. In each village, 15 caretakers with children under 5 were randomly chosen for interview. Included in the questionnaire were questions on characteristics of caretakers, recent diarrheal episodes experienced by children, treatment of diarrhea, oral rehydration therapy (ORT) utilization, and other topics.

This KAP survey confirmed the assumptions of the researchers concerning caretakers' lack of knowledge about how to treat diarrhea and their use of traditional practices that contribute to dehydration. Over 60 percent of caretakers had not heard of the home-mixed sugar/salt solution used to treat diarrhea. More than 50 percent of caretakers did not know how to mix the oral rehydration salts (ORS) packet and 60 percent did not recognize the ORS packet. More than 90 percent of the caretakers gave medications for diarrhea. Less than half continued breastfeeding during the child's diarrheal episode. Only 15 percent of the caretakers' children had received ORT during their last illness.

A 1-day seminar was held to place the subproblems in priority order for the PRICOR study and to develop appropriate solutions. Participants included the PRICOR investigator, two research assistants, the Principal of the Kolahun Public School, and a teacher. Using a modified preference matrix, the group

decided that the project would focus on the subproblems in the following order: (1) caretakers' lack of basic knowledge about diarrhea treatment, (2) the adverse practices of caretakers during diarrheal episodes, (3) local beliefs that adversely affect the care of children with diarrhea, and (4) inadequacies of the health care system for diarrhea treatment.

Using similar preference matrices, the participants proposed solutions to the priority problems and developed a strategy to educate and motivate caretakers to use the home-mixed sugar/salt solution to treat childhood diarrhea. Village health workers (VHWs) and traditional birth attendants (TBAs) would be trained to educate and motivate the caretakers, and primary school students would be taught simple lessons about diarrhea which they were expected to pass on to their parents.

Three VHWs and two TBAs were trained as educators and motivators. For a period of 8 months, these community-level health workers encouraged caretakers of children with diarrhea to make and use the simple, home-mixed sugar/salt solution to treat diarrhea. Sessions with caretakers were also used to reinforce positive diarrhea interventions and discourage negative ones. The VHWs and TBAs were required to record in simple ledgers the names and ages of patients they treated for diarrhea, the length of treatment with ORT, and the outcome of the treatment. During the field test period, students in a class at the Kolahun Public School (consisting of 75 students up to the 7th grade level) were taught simple lessons on diarrhea management.

In the course of the field test, the researchers became convinced that VHWs and TBAs can be effective as educators and motivators of caretakers in the use of ORT. The VHWs and TBAs reported a total of 94 children and adults treated for diarrhea with ORT during the 8-month period of the field test. Of these, four were referred because of dehydration. No deaths were reported. Although the number of patients reported seen and treated for diarrhea by the health workers is small, the researchers believe that ORT is gaining acceptance in the study villages and will be more widely used as more caretakers become aware of its utility in saving lives.

The primary school students were very enthusiastic about the lessons they received on diarrhea treatment with ORT. The impact of these lessons on the incidence and degree of dehydration has yet to be assessed. The researchers believe that the lessons will have an impact and recommend that the simple lessons on diarrhea and ORT be incorporated into the curriculum of the primary schools.

\* \* \*

This study was conducted from May 1985 through March 1986 by the Christian Health Association of Liberia (CHAL). Further information is available from the principal investigator, Dr. Andrew Cole, P.O. Box 1046, Monrovia, Liberia, or from Dr. Jeanne Newman, PRICOR study monitor (Chevy Chase).

**Study Abstract**

**MICROPLANNING OF ACTIVITIES OF COMMUNITY HEALTH  
AUXILIARIES IN THE STATE OF MEXICO**

In recent years, special attention has been placed on primary health care (PHC) as the main strategy for delivering health care to unserved or underserved communities in Mexico. In the State of Mexico, one of 31 states in the country, the Coordinated Public Health Services of the State of Mexico (SCSPEM) provides health care to the majority of the citizens. Although Community Health Auxiliaries (CHAs) are a key component in the PHC program, it is recognized that discrepancies exist between the activities of the CHAs as planned and executed and the needs and demands of the communities they serve. The objective of this study was to increase the effectiveness of CHAs through improving the match between health care services and community health needs.

The first phase of this study consisted of a problem analysis of the CHAs' current practices to: (1) determine the nature and degree of incompatibility between the CHA activities and the communities' needs and demands and (2) better understand how the CHA actually participates in planning her own work. Several techniques were used for this phase. First, because the State of Mexico is very heterogeneous, a typology of the different communities was constructed to allow the investigators to group localities with similar socioeconomic characteristics. Five community prototypes were developed: rural, indigenous, urban industrial, urban nonindustrial, and traditional industrial. All subsequent data collection activities were carried out using a sample of microregions stratified by prototype community.

A survey of 381 CHAs was conducted to better understand the actual practice of the auxiliaries. The survey collected descriptive information about the CHAs, their activities, perceived problems, and their contacts with other levels of the health system and with the community. To corroborate the self-reported activities, a "shadow study" of 38 CHAs was undertaken to observe over a 3-day period the activities of auxiliaries in each of the prototype microregions. Finally, the research team conducted interviews with formal and informal leaders and held public meetings in 10 communities to discuss the findings of the survey and shadow study. In the public meetings, the nominal group technique was used to identify and rank the main problems threatening the health of the community.

The problem analysis concluded that CHAs in the State of Mexico were overburdened with too many tasks and were unable to respond to the specific problems and concerns of their community. The resulting solution objective was to find ways to improve the microplanning of CHA activities to ensure that the auxiliary's efforts are more efficiently and effectively channeled towards

the concerns of both the health delivery system and the community. The strategy developed to meet this objective involved reducing the number of tasks programmed at the central level for the CHA and training CHAs and their supervisors in the microplanning process.

Microplanning is a process the CHA carries out with the participation of the community and her supervisor to identify, plan, and implement actions to resolve local health problems. This process begins with the analysis by the CHA and her supervisor of available basic population data from family health records, surveys carried out by the State Health Service, and from a community census carried out by the auxiliary herself. This includes data on number and size of families, age distribution, education level, access to water and sanitation, and employment in her microregion. Understanding the relationship of this data to health problems in her community is a first step in directing the CHA's activities to meet community needs. The next step in the microplanning process is to talk with members of the community about their perceptions of key health problems and their causes. This can be done in a number of ways, including community meetings, small group discussions, and conversations with formal and informal leaders. The problems and actions identified are then incorporated into the planning of weekly and monthly activities for the CHA, which is done jointly by the health auxiliary and her supervisor. This process should result in improved CHA effectiveness since it allows the CHA to directly access her community's health problems and demands and incorporate these into her work plan.

Microplanning was introduced on a test basis in a representative group of CHAs in the different prototype communities in the State of Mexico in early 1986. Twelve CHAs and their supervisors were taught to diagnose the problems of their community, to consult with members of the community to understand their perceived problems and priorities, and then use this information to plan daily activities. The supervisors have also received training in how the CHA can and should be involved in the planning of her activities.

It is still too early to evaluate the program based on the goals but it is encouraging to note that at the completion of the research study, community diagnoses had been completed for eight communities. In addition, the auxiliaries, along with their supervisors, have begun developing and implementing weekly, monthly, and annual work plans. It should also be pointed out that components of the microplanning process training program have been incorporated into the PHC training of 150 physicians from throughout the State who will be responsible for implementing this process in their own areas.

\* \* \*

This study was carried out from May 1984 through March 1986 by the Coordinated Public Health Services of the State of Mexico. Further information is available from Dra. Ana Ramos, Principal Investigator, Porto Alegre 12256, Col. San Andrés, Tetepilco, C.P. 09440, Zona 13, Mexico, D.F.; or from Ms. Lani Rice Márquez, PRICOR study monitor (Chevy Chase).

## Study Abstract

## ATTRITION AMONG VILLAGE HEALTH WORKERS IN NIGERIA

During the period 1968-83, the Christian Reformed Church of Nigeria (CRCN) Rural Health Program in southern Gongola State, Nigeria, trained some 70 village health workers (VHWs). These VHWs work at remote village health posts where they treat common diseases with basic drugs and provide health education. However, most of the VHWs leave their work after 1 to 3 years. The objective of CRCN's study was therefore to determine why the VHWs leave and to find ways to keep them on the job.

Using information from case studies of other VHW programs and from questionnaires and interviews with village health committees, active and inactive VHWs, traditional birth attendants (TBAs), and selected women leaders, the study team identified variables that have contributed to the high VHW attrition rate:

- Low salaries.
- Displeasure with VHWs' limited curative role (e.g., they are not certified by the government to give injections).
- Small number of patients treated (average of two per day).
- Lack of community support and respect.
- Infrequent supervisory visits (fewer than two per year in most cases).
- Absence of opportunity to upgrade skills or to enter professional health training.
- Competition from more prestigious health facilities nearby.

The following are interesting statistics that emerged from the survey:

- Men continued as VHWs an average of 3 years, women only 1.5 years.
- Length of service was no different for those above and below age 30.
- VHWs with the lowest pay left their jobs after 1 year (women) or 2 years (men), while those paid more stayed on 1.5 years (women) to 3 years (men).
- Among those who dropped out, about half moved into higher training in health work and half returned to full-time farming.
- The presence of a larger health facility nearby (6 km or less) shortened the median length of service of the VHW from 3 to 2 years.

To develop a solution to the attrition problem the principal investigator, together with the research assistant and six members of the health staff who served as trainers of the VHWs, met to evaluate the responses from the

interviews and questionnaires. Using a nominal group process to elicit participants' views, they developed five solutions for testing:

1. Impose specific guidelines for the selection of trainees (e.g., they should be over age 25, married, and primary school graduates).
2. Improve the local health committees.
3. Institute regular supervisory visits (every two months).
4. Conduct inservice training for VHWs.
5. Upgrade the task specification of the VHW (e.g., train Community Health Aides instead of VHWs for larger villages).

The fifth solution was based on the discovery during the study that the community did not really want VHWs but rather a higher level of worker who could deliver a broader range of services.

The study team later added two more possible solutions to the above list: (1) offer VHWs the opportunity to be trained as Community Health Aides after working 2-3 years as VHWs; and (2) develop a health education program for church women's groups and male church leaders.

All these solutions will be tested during the next 5 years, the results of which are expected to be useful not only to the work of CRCN but also to other church-funded primary health care projects and to the Nigerian Ministry of Health.

\* \* \*

This study was conducted from January 1984 through March 1986 by the Christian Reformed Church of Nigeria (CRCN) Rural Health Program. Further information is available from the principal investigator, Dr. Herman Gray, CRCN Rural Health Program, P.O. Box 30, Wukari, Gongola State, Nigeria, or from Dr. Jeanne Newman, PRICOR study monitor (Chevy Chase).

## INCREASING THE PRODUCTIVITY OF COMMUNITY HEALTH WORKERS THROUGH SUPERVISION IN RURAL AREAS OF NIGERIA

Low productivity of community health workers (CHWs) has resulted in inadequate health care coverage in rural areas of Nigeria. A research team from the University of Ife, having identified lack of CHW supervision as a major cause of this low productivity, conducted an operations research study during 1984 - 1985 to identify inadequacies in current supervisory practices and to propose strategies for improving supervision.

Data on the supervision process were gathered through a set of pretested, complementary questionnaires for supervisors, CHWs, and households in the Ife-Ijesha area of Oyo State in Nigeria. Analysis of the questionnaires showed that current supervisory practices were inadequate. The frequency of visits to CHWs was low and the duration of each visit was short — less than one visit per month and less than one hour per visit. The majority of the PHC units in the area were not, in fact, visited by supervisors more than once a year. Supervisors gave little priority during these visits to reinforcing CHW community outreach activities or home visiting and seldom followed up on the unresolved problems of the CHWs.

The supervisory system contributed to the inadequacies in supervision by failing to provide supervisors with the resources and support they needed to supervise effectively. Few of the supervisors participating in the study had been trained specifically in supervisory methods and management techniques. No guidelines or protocols were available to assist the supervisors in planning and implementing supervisory visits. Although some of the supervisors were required to travel as much as 300 km a month on visits to CHWs, few received mileage allowances or travel advances or had access to official vehicles. Resources such as essential drugs and dressings were often unavailable to the supervisor or the CHW. Moreover, the supervisors had major clinic responsibilities in addition to their supervisory duties.

Home visiting coverage by CHWs was selected by the PRICOR researchers as an indicator of CHW performance, especially in preventive care. Analysis of the data showed that the longer and more frequent the supervisory visits were, the greater the proportion of homes visited. Supervisory tasks (such as planning, coordinating, and holding staff meetings; monitoring clinic operations; reviewing and collecting statistics; and giving technical assistance) were positively correlated with high home visiting coverage.

Having identified the problems, the researchers proposed several alternative strategies for improving supervisory practice. A large solution development workshop was held to assess the feasibility, effectiveness, and importance of these and other strategies. At this workshop 108 participants, including the

supervisors themselves, health officials, and policymakers, used the operations research technique of Multiple Criteria Utility Assessment (MCUA) to select strategies for improving supervision.

As a result of the workshop, the following strategies were recommended to the Federal and State Ministries of Health:

- Establish inservice training programs in supervisory methods and management techniques for current supervisory cadres of health workers.
- Include similar training in the curricula of the educational programs for new supervisory personnel, and see that at least one member of the faculty of each training center is trained in supervision and management.
- Revise the schemes of service for new cadres of CHWs to stress prevention and community outreach.
- Develop planning tools, guidelines, and protocols for supervisors, and train supervisors in their use.
- Carry out a field trial of the solutions suggested, especially the supervisory protocols developed by the study team.

These recommendations, along with the draft supervisory protocols, have been presented to the Federal and State Ministries of Health, UNICEF, and WHO. A third phase of the research to test the recommended solutions has been proposed to the Federal Ministry of Health.

\* \* \*

This study was conducted by the Department of Community Health and Nutrition of the University of Ife from March 1984 through December 1985. Further information is available from the principal investigator, Dr. Ebenezer Ojofeitimi, Faculty of Health Sciences, University of Ife, Ile-Ife, Nigeria, or from Dr. Jeanne Newman, PRICOR study monitor (Chevy Chase).

---

## Study Abstract

### TRAINING HEALTH WORKERS IN PAPUA NEW GUINEA

The Government of East New Britain Province has set a policy of reorienting health services in the province from a largely curative-focused system to one more in accord with the philosophy of primary health care (PHC), that is, with more emphasis on prevention and promotion at the community level. Among the various problems associated with such reorientation, health officials give high priority both to additional training for local health workers (Aid Post Orderlies, or APOs) and more community involvement in decisions concerning health care services. This study was conducted by the University of Tennessee Division of Public Health with the Church Health Service of Papua New Guinea from 1984 to 1986.

Early in the study, a planning group was formed comprising personnel from all levels of the Church Health Service (which has been mandated with providing service to much of the province) and the Provincial Health Service. Using such group decisionmaking techniques as brainstorming, nominal group, and multiple criteria utility assessment (MCUA), the planning group came to agreement on the most important elements of PHC, defined and set priorities among program objectives, and decided upon a strategy for training not only the health workers but also community leaders. They identified three operational clusters for concentration: specifying tasks for the local health worker, developing a program for their training, and creating community and system demand and support for PHC.

Next, the planning group proposed and analyzed several feasible strategies for achieving their objectives in these four problem areas. Again using MCUA, they decided upon a solution centering on training the APOs and the community leaders in the villages, that is, "among the people" instead of "within the health system." This approach was to emphasize for both the health workers and the villagers the role of the latter in the system. These planning sessions also served to teach the planning group members the use of the group decisionmaking techniques. These skills were sharpened at a pilot workshop involving the head of each division in the health department, as well as the heads of other development-related sectors, funding agency representatives, and people from 12 villages.

Four actual workshops for villagers and health workers were held to test the training strategy. Results were evaluated on the basis of change in health workers' and villagers' knowledge and application of targeted skills, and of village organization of PHC-related projects such as clean water or nutrition-oriented community gardens. These behavioral changes and PHC projects demonstrated the training strategy's effectiveness. However, the investigators and health service officials considered just as important the

villagers' effective participation in the process of specifying their own health problems and priorities, and their demonstration--especially to themselves--that they could affect the delivery system in ways that they saw as beneficial. Finally changes also occurred within the delivery system. Of particular importance was the incorporation of PHC tasks into the rural health worker's job description, reporting system, and performance appraisal.

\* \* \*

This study was conducted from November 1984 through March 1986 by the Division of Public Health of the University of Tennessee in collaboration with the Church Health Service of Papua New Guinea. Further information is available from Ms. Ellen Vor der Bruegge, Dr. Sherilynn Spear, and Dr. Charles Hamilton at the Division of Public Health, University of Tennessee, Knoxville, Tennessee 37996-2700, or from Dr. Stewart Blumenfeld, PRICOR study monitor (Chevy Chase).

## Study Abstract

### AN IMPROVED SYSTEM FOR THE DELIVERY OF BASIC HEALTH SERVICES IN A HIGH JUNGLE AREA OF PERU

International Health Technologies, Inc. (IHT), in cooperation with the Universidad Peruana Cayetano Heredia, has been developing ways to use portable microcomputers to solve some of the health information problems associated with the delivery of primary services at the community level in Peru. The PRICOR portion of their study consisted of a field trial in a remote high jungle area to test the feasibility of using microcomputers with solar power source. Researchers hoped to determine how health workers respond to using microcomputers and how microcomputer use can affect data collection, worker motivation, and utilization of resources (e.g., pharmaceuticals).

The pilot study consisted of equipping 10 community health workers with a Hewlett-Packard lap-top HP 110 computer and training them to use the computer's interactive software routines in their consultations with members of their communities. The core software package used in the study consisted of the following modules: household census, visit registration, routine child visit (immunization status and growth monitoring based on the UNICEF "Road to Health" chart), and diarrhea diagnosis and treatment. Following early problems associated with the rainy season and with matching a solar-recharging system to the computer battery-charging system, the study team was able over a period of several months to implement the complete prototype system for pilot testing in 10 community health posts.

Since the study is being continued until the end of 1986, with funding from the Ministry of Health, final results of the demonstration trial are not yet available. However, the study has already produced sufficient data to support some key preliminary findings.

First, with regard to the adaptability of the microcomputer hardware, the HP 110 computer has been reliable and appropriate for the environment. Since the HP 110 has no moving parts, its frequency of repair record is expected to be very good. The main problem with the computer, battery recharge, was solved by replacing the direct charging circuit with a solar panel and storage battery system (using a standard, inexpensive 12-volt battery).

Second, the training of the health workers to use the computer was neither difficult nor time consuming, after the initial anxiety of the health workers about using computers was overcome with hands-on practice. Through the use of a simple letter-hunting game that teaches the computer keyboard, the trainees, whose education level averaged sixth grade, quickly became confident in their ability to "master the machine." All 10 returned to their communities after

4-7 days of training able to do an ongoing census. The supervisor, during community visits, introduced the health workers to the other modules, each of which required only about 2-4 hours of training. The researchers found that training could become even more rapid and efficient by developing for each of the modules a well-crafted, interactive training program, that is, one in which the computer "controls" the training session.

Third, the health worker and the community have enthusiastically accepted the computer and computer assistance. The health worker finds the computer useful in at least two important ways: the messages that appear on the screen serve not only as prompts for the next step in the child's evaluation but also as an authority which the health worker reads or cites to the mother. The mother perceives that she is getting not simply the health worker's opinion but an authoritative statement from a valid source of medical expertise. She therefore seems to be more willing to accept the advice of the health worker guided by the computer than that of the health worker alone. At the same time, health workers' status in the community appears to have increased since the introduction of the microcomputer.

Finally, the computer-based system already appears to be improving service delivery and recordkeeping for targeted activities. The interactive census module, which permits health workers to maintain an accurate up-to-date census of the families in their communities, appears to be having a psychological effect on parents who sense that the system is "paying attention" to their children. Health workers in the study villages, with the assistance of the monitoring module, the UNICEF card, and scales provided by the project, have been able to take each child through a thorough well-child examination and obtain an expert evaluation of that child's risk status each month.

Results to date suggest that microcomputer-aided health delivery at the community level is not only possible but can be a powerful mechanism for improving the quality and quantity of such health care. The computer-based system used in this study, named PROMETHEUS-PHC by the investigators, has been officially recognized and enthusiastically supported by the Government of Peru and even appears to have the potential to attract venture capital from Peruvian industry.

Funds from the Ministry of Health, together with private IHT resources, will enable the field trial to continue until December 1986, at which time the investigators will report final results to PRICOR.

\* \* \*

This study was conducted from August 1985 through March 1986 by International Health Technologies, Inc., in cooperation with the Universidad Peruana Cayetano Heredia. Further information is available from the principal investigators, Dr. William H. Spira and Dr. Paul Skillicorn, International Health Technologies, Inc. P.O. Box 30178, Bethesda, Maryland 20814, or from Ms. Lani Rice Márquez, PRICOR study monitor (Chevy Chase).

ALTERNATIVE TRAINING STRATEGIES  
FOR BARANGAY HEALTH WORKERS

Researchers from the University of the Philippines College of Nursing, in collaboration with staff from the Training Division of the Ministry of Health, undertook an operations research (OR) study to examine the problems in training barangay (village) health workers (BHWs). The objectives of the study were to: (1) analyze positive and negative aspects of the existing BHW training programs; (2) develop and field test alternative training strategies; and (3) propose improved strategies for selecting and training BHWs.

Three study sites in the Luzon region (one urban, two rural) were considered models in primary health care (PHC) delivery. To assess the quality of training at these sites, the investigators reviewed the program design, and surveyed the BHWs, the BHW trainers, and the community.

While the training manuals were found to be adequate in terms of topics covered, there was some disagreement between the BHWs and their trainers on the rank-order of topics in terms of their practical importance to the work of the BHWs in the communities. There was significant dissatisfaction with training scheduling, with the general training approach (too much lecturing), with the lack of sufficient materials, and with the use of English as the primary teaching language, given that for most barangay residents English is a second language understood at a basic level. Among some communities, knowledge of what services BHWs could provide was quite low. Not surprisingly, utilization of BHW services was also low.

Earlier evaluations of reasons underlying the turnover and malfeasances of some BHWs had raised questions about selection criteria. Therefore, some psychological testing was done of personality traits of the BHW group to see how well they matched the expectations of their trainers on traits assumed to be relevant to stability and performance. It was anticipated that these personality portraits would be compared to BHW performance indicators, but this analysis was given lower priority and was not finished in the course of the main OR study. Nevertheless, the data gave some insights into the group and allowed some educated guesses about traits that seem to be associated with higher performance (empathy, willingness to give service, maturity, and self-confidence).

As a result of this analysis of the problem, a new selection and training approach was developed to include the following features:

- A more targeted recruitment campaign.
- More prevention-oriented course content.
- More focus on skill-development than information transfer.
- Standardization of length of training at 5 weeks (1 day lecture, 4 days practicum per week).
- Group dynamics (warm-up) sessions before all lecture periods.
- Monitoring of practicum activities through use of weekly worksheets.
- Use of pre- and post-tests to assess learning progress.
- Emphasis on BHW household assignments at a 1:20 ratio.
- Regular post-training monitoring of BHW activities and performance by means of a BHW Performance Rating Scale designed jointly by the BHWs, the trainers, and a panel of community health experts.
- Dissemination to BHWs of the results of the community survey conducted before and after implementation of the alternative training program.

To evaluate the output of the alternative training program, the study team used case study analysis and structured interviews of BHWs, trainers, and community respondents. The following are some of the major conclusions derived from the study:

- The alternative training strategies provided BHWs with basic knowledge and skills they needed.
- Separate subject modules were both effective teaching tools and useful references after training.
- Periodic consultations with BHWs regarding modification of the training program increased motivation.
- Group dynamics sessions contributed to individual growth of BHWs as well as to team building.
- Tangible incentives are necessary to sustain BHW interest and motivation.
- Supervision and monitoring still needed improvement.
- The community needs to be more involved in the recruitment process.

\* \* \*

This study was conducted by the University of the Philippines College of Nursing from December 1983 through February 1986. Further information is available from the principal investigator, Dr. Leticia Lantican, College of Nursing, University of the Philippines, Padre Faura Street, Manila, Philippines, or from Dr. Stewart Blumenfeld, PRICOR study monitor (Chevy Chase).

## Study Abstract

No. 29, November 1986

INCREASING THE EFFECTIVENESS OF BARANGAY HEALTH WORKERS IN  
PROVIDING NUTRITION SERVICES WITHIN THE PHC FRAMEWORK

A recent decline in food production in the Philippines has increased problems of childhood malnutrition and resultant mortality. The development of a nutrition intervention program within the primary health care (PHC) structure has therefore been identified as a top priority. In April 1984, an operations research project aimed at improving the delivery of nutrition services by barangay (village) health workers (BHWs) was initiated by the Institute of Public Health (IPH) of the University of the Philippines in cooperation with the Nutrition Service of the Ministry of Health (MOH).

The researchers used three sources of data to identify specific operational problems with the current village-level nutrition service: (1) the current BHW nutrition training module, (2) interviews with BHWs and MOH midwives who provide supervision for the BHWs, and (3) a survey of community members in four barangays.

The review of the BHW nutrition training module indicated that there were information gaps on some important nutrition topics. The module emphasized food production, with less attention given to growth monitoring, promotion of appropriate nutrition practices, and rehabilitative maternal and child nutrition. The BHW and midwife survey revealed further problems with the training of BHWs for nutrition service delivery. The BHWs felt that insufficient time was spent on nutrition topics during training sessions. They also felt that the emphasis on food production was inappropriate given the lack of land, space, and capital in their communities. Moreover, they reported that mothers in the barangays were not interested in nutrition services.

The respondents to the community survey were typically mothers with more than three children. Many community members knew the value of breastfeeding and participation in the national child weighing program (Operation Timbang), but few were aware of the availability of nutrition rehabilitation wards, nutrition clinics, or other nutrition services. Perceived problems affecting nutrition included lack of nutrition information, inappropriate selective provision of food supplementation by clinic workers, and lack of space for backyard gardening. The major nutrition activity reported by the community members was referral of malnourished children to the local midwife.

As a result of the survey analysis, the research team concluded that the priority operational problem was revision of the MOH training program in nutrition for BHWs. Using multiple criteria utility assessment (MCUA), they devised a strategy for modifying both the training modules and the training approach. Factors considered in the MCUA were topic content and emphasis, appropriate trainers, method of instruction, and duration and location of training. Topics selected were importance of good nutrition, food handling, weighing, nutrition during pregnancy and lactation, infant and preschooler nutrition, common nutritional disorders, introduction of nutrition classes in

5530 Wisconsin Ave. • Chevy Chase, MD 20815 USA • (301)654-2550 • Cable: URCINTER • Telex: 64693

the community, and family productivity. Trainers selected were a mix of public health nurses, midwives, and regional nutritionists. The method of instruction designed was a combination of lecture, discussion, demonstration, role-playing, and group dynamics. The curriculum was presented over a 5-day period. [This training program was designed to help BHWs perform three major tasks: determine nutritional status of household members, deliver selected nutrition services, and monitor nutrition status of the community.] Results of pre- and post-training tests of the BHWs showed improvement in the nutrition knowledge of 60 percent of the trainees.

Following their training, the BHWs in each barangay developed their own action plans for delivering nutrition services based on their new knowledge and skills. For example, in one barangay, the plan included organizing community classes on nutrition and proper use of herbal medicines, conducting home visits during the month of July, and home weighing sessions every second quarter of the year. In another barangay, the BHWs agreed to implement family planning education, weighing sessions, and a house-to-house nutrition education campaign.

Using participant observation and monitoring forms, the PRICOR researchers documented the nutrition-related activities of the BHWs. A post-intervention survey of mothers was carried out to detect changes in knowledge, attitudes, and practices (KAP) towards nutrition. The post-intervention survey showed that mothers' KAP were positively influenced over the study period. For example in one barangay, utilization of nutrition services increased from 38 to 67 percent of the village women after three months. Utilization of the training modules extended beyond the project to other organizations. In two barangays, community participation in nutrition services provided by the BHWs initially increased, but declined as BHW interest apparently decreased. In a third barangay, however, there was a progressive increase in community participation in nutrition activities.

A variable that seemed to be key in the success or failure of the nutrition activities was the support of the local midwife and the community. In the two communities where BHW interest decreased, neither the midwife nor the communities gave strong support to the BHWs in their nutrition service delivery. In the more successful barangay, community input and strong support from the midwife led to continued improvement in the BHW's nutrition activities. The researchers concluded that, in order for BHWs to carry out successful nutrition service delivery, training would probably need to be supplemented by strong supervision by the midwife and substantial community support.

The new BHW training curriculum devised by the research team has been endorsed by the MOH Nutrition Service and now is being used in the MOH's BHW training program.

\* \* \*

This study was conducted from May 1984 through March 1986 by the Institute of Public Health of the University of the Philippines, in cooperation with the Ministry of Health. Further information is available from the principal investigator, Dr. Carmencita Salvosa-Loyola, University of the Philippines, Institute of Public Health, P.O. Box EA 460, Manila, Philippines, or from Dr. Stewart Blumenfeld, PRICOR study monitor (Chevy Chase).

---

## Study Abstract

### COMMUNITY FINANCING OF PRIMARY HEALTH CARE IN RURAL AREAS OF SENEGAL'S SINE SALOUM REGION

One of the objectives of the second phase of the Sine Saloum Rural Health Project (SS-RHP) in Senegal is to decrease the dependence of the project on USAID funding. Given rigid budget constraints, the Senegal Ministry of Health (MOH) needs to find alternative means of financing the basic health services provided by the project. An operations research study carried out by the Harvard Institute of International Development in 1983 addressed this problem. The objective of the study was to determine whether community financing could adequately support rural primary health care (PHC) in Sine Saloum.

The Sine Saloum Rural Health Project has been in operation since 1977. The project provides PHC services to 880,000 people in five of six departments of the region through a network of self-sustaining "health huts" (village-based health care facilities) in about 600 villages. Villagers are expected to construct the huts, encourage their fellow community members to use the new services, and compensate the village health workers (VHWs) trained by the project. Funds to cover costs are to come from the fees collected for medicine and other services. Ideally, government supervisors visit each village once a month to supervise VHWs and to encourage village health committees in their support of the VHW and of PHC. Phase II of this project was being designed at the time of the PRICOR study.

In order to examine the potential for community financing of PHC, the principal investigator proposed to analyze the economic feasibility of 13 government-initiated PHC activities. These activities were broken down into those that were involved in establishing a local PHC program and those that were involved in operating and maintaining such a program.

Establishment phase activities included: sensitization of villagers, agreement of village leaders to participate in the PHC program, nomination of community members to serve as volunteer health workers (VHWs), preservice training of VHWs, construction of a health hut, and provision of an initial stock of drugs and other medical supplies to the VHWs. The operation and maintenance phase included: patronage of VHWs by the villagers, availability of VHWs to serve the villagers, resupply of drugs and related products, physical maintenance of the health hut, management of project income by community representatives, supervision by government health officials, recording and reporting of service data, and inservice training of VHWs.

Through a review of existing documentation on PHC interventions in Senegal and interviews of health care providers and decisionmakers at all levels of the health system, the principal investigator described activities relating to supervision, VHW remuneration, and drug distribution. He also attempted to determine whether each activity is essential to the maintenance of rural PHC and, if essential, how it can be financed. He then made the following conclusions regarding the community financing potential of each of these recurrent cost components.

The major supervision costs to the Sine Saloum Project were those associated with supervisors' transportation to the villages (e.g. motorcycle fuel, maintenance, and repair). None of the possible financing sources examined seemed likely to pick up a substantial share of these costs in the near future. The investigator therefore proposed that a less intensive supervision system be established.

In the area of VHW remuneration, an in-depth sociological observation of the existing situation was proposed. The investigator thought that this would be necessary to assess the present level of VHW compensation in Sine Saloum, as well as its variability, its stability, and its adequacy to sustain VHW-based PHC.

The investigator also concluded that the existing network of private commerce in Sine Saloum could handle the distribution of pharmaceuticals at a fraction of the cost incurred by public sector agencies, and with greater reliability and frequency of resupply.

Using these conclusions, the PRICOR investigator developed recommendations for the design of the second phase of the Sine Saloum Rural Health Project. Concerning the extension of the project to the remaining departments of the region, he recommended that a preliminary sociological and anthropological investigation be a prerequisite to the implementation of the program (construction of the health hut) in any village. The purpose of this investigation would be to determine the villagers' perceptions of their health problems; the procedures the villagers are currently following to obtain health care; how much time, effort, and money it cost villagers to obtain health goods and services; and what improvements in health care they expect from the new PHC program. The investigator also recommended developing studies to assess the effects of phasing out onsite supervision and to determine how modified arrangements for drug procurement affect the reliability of supply in those areas where USAID support for the PHC program is gradually being withdrawn.

\* \* \*

This study was conducted from July 1983 through December 1985 by the Harvard Institute of International Development (HIID). Further information is available from the principal investigator, Dr. Clive Gray, HIID, 1737 Cambridge Street, Cambridge, Massachusetts 02138, or from Dr. David Nicholas, PRICOR study monitor (Chevy Chase).

## Study Abstract

### ALTERNATIVE STRATEGIES FOR FINANCING PRIMARY HEALTH CARE IN THE PHILIPPINES

With PRICOR assistance, a team from the University of the Philippines in the Visayas (UP-V) conducted a 2-year operations research study in Iloilo Province aimed at developing feasible approaches to mobilizing community resources to help pay for primary health care (PHC) services. The study was part of a larger project (Panay Unified Services for Health-PUSH) carried out by the National Economic Development Authority in the region to improve PHC services on the island of Panay.

The UP-V/PRICOR study had three major objectives: (1) to help the people in each of the study villages (barangays) determine what services they would support; (2) to help them find appropriate means for raising funds and then help them develop and implement effective financial management schemes; and (3) to encourage them to use part of their resources to pay for preventive and promotive services.

Six barangays, selected to represent different economic sectors of the island, participated in the study. In each barangay a baseline survey was carried out to determine what people believed to be the most important health problems in their community. The survey also identified people's perceived needs in terms of health services; their attitudes toward, and utilization of, available local health services, particularly the Barangay Health Workers; their current expenditures for health services in the public and private sectors; and their stated willingness to pay for additional services not available locally through some sort of community financing mechanism. The major health problems were perceived to be respiratory and gastro-intestinal illnesses. Annual health expenditures per household were estimated to range from P200 (\$29) to P300 (\$43). The unavailability of drugs and poor water supply facilities were perceived as major health-related problems. The majority of households expressed willingness to participate in community financing of health activities. In the six barangays, the purchase of drugs and the operation of a drug depot (botika) were projects that community members were most willing to finance.

Solution development consisted of several steps that involved the barangay residents in community financing projects. First, the study team charted the results of the baseline survey pictorially and presented them to the barangay residents at community assemblies. After learning the results of the baseline survey and discussing them, the communities selected health activities they would fund through a community financing project and the type of financing mechanism they would use. Five barangays chose to finance and run community

drugstores, botikas sa barangay, and one barangay decided on an emergency hospitalization loan fund. These would be revolving funds in which user payments for drugs (or repayment of loans) are used to replenish stocks (or replenish the loan fund). Most barangays selected a flat rate contribution from households for the initial capitalization of the project, but supplementary fundraising activities, such as taxes on sales of produce and livestock, raffles, and parties, were also included in some of the plans. One month after the community financing schemes were initiated, the researchers held a workshop in each barangay for members of a core group of villagers who had agreed to take responsibility for the project. These workshops were used to plan the community financing project in more detail, to strengthen the management capabilities of the core group, and to teach concepts of primary health care. During this workshop, community women were selected for the jobs of "lead mother." These unpaid volunteers were to assist the barangay residents in implementing preventive and promotive health activities.

Most of the barangays were able to collect an average of 46.1 percent of the targets they had set for fundraising through flat rate contributions. The botikas were managed and run by volunteers from the communities. One person was generally in charge of dispensing drugs, collecting money, and maintaining stocks. Each botika made its own arrangements to buy its initial stock and replenishments. Pricing policy was set by each barangay. Stock turned over at annualized rates ranging from 132 to 913 percent and profit on sales ranged from 16 to 22 percent, despite claims of very small markups. Nine months after the research study had ended, the botikas and the emergency fund were found to be still functioning. Between 83 and 92 percent of barangay residents had contributed to the capitalization of the botikas (99 percent to the loan fund). Utilization of the botikas ranged between 54 and 77 percent of households. The results of the lead mothers program were mixed. Those barangays where lead mothers were active and effective did make clear, however, that potential beneficiaries of health services (lead mothers) can take on roles as preventive and promotive health care motivators if they are given adequate support.

From the success of the botikas sa barangay, it can be concluded that these Filipino villagers valued having a local source of desired drugs sufficiently to pay for this service. They were not, however, willing to pay for preventive and promotive health services, as had been initially hoped by the PRICOR researchers. With considerable outside assistance, the barangay residents did learn how to capitalize, organize, and manage revolving funds. Extensive community participation in designing, financing, and managing the botikas seemed to be a key factor in their performance and sustainability.

\* \* \*

This study was conducted from January 1983 to May 1985 by the University of the Philippines in the Visayas Foundation. Further information is available from the co-principal investigators, Dr. Trinidad S. Osteria, Institute of Southeast Asian Studies, Heng Mui Keng Terrace, Pasir Panjang, Singapore, and Professor Ida M. Siason, University of the Philippines in the Visayas, Iloilo City, Philippines, or from Dr. Stewart Blumenfeld, PRICOR study monitor (Chevy Chase).

DEVELOPMENT OF APPROPRIATE METHODS  
FOR SUSTAINING RURAL HEALTH MOTIVATORS

The Rural Health Motivator (RHM) is a key primary health care (PHC) element in rural Swaziland. The program, however, suffers from high turnover rates. In conjunction with the Primary Health Unit (PHU) of the Ministry of Health (MOH) and with the support of the PRICOR Project, a team from the Social Science Research Unit (SSRU) of the University of Swaziland undertook an operations research (OR) study to find ways to stabilize the RHMs.

The solution to the problem was identified as having three main components: community participation, stronger supervision, and dependable compensation. RHMs receive a monthly stipend from the Ministry, but it is small and delays in payment are not uncommon. In setting priorities to resolve the problem, the MOH/SSRU team decided, on the basis of previous work with groups of RHMs, that small, irregular compensation was probably the major cause of RHM turnover.

Supplementation by the community was thought to be an appropriate solution because it offered the benefit not only of increasing the RHM's payment for services, but also promoting increased community involvement in assuring availability of PHC. However, the researchers determined that before communities would be willing to pay for RHM services, the skills of the RHM would have to be strengthened. The objectives of the research, therefore, became to define a set of skills within the capabilities of the RHM that were acceptable to the MOH and that the community would consider worthy of compensation, and to develop an appropriate compensation scheme.

Several OR techniques were used in the problem analysis phase of the study to examine the organization of the country's PHC system and to identify constraints, inputs, processes, outputs, and outcomes. A nationwide survey, which elicited information crucial to solution development, focused on four areas: utilization patterns of health care, health expenditure, willingness of communities to support the RHMs, and attitudes of the RHMs themselves toward their work. An interesting finding of the survey was that while 28 percent of the respondents said they would be willing to support the RHM financially, not one of the RHMs interviewed believed the community would be willing to do so, mainly because the RHMs were, in principle, already receiving a salary from the government. Based on comments from the RHMs, experience gained from other projects, discussions with health professionals, and the results of the community survey, the research team developed matrices to determine what RHM activities should be strengthened or introduced. The matrix results, in combination with discussions with MOH officials, determined that immunization, oral rehydration therapy (ORT), and growth monitoring

should be emphasized. Another matrix helped identify prepayment for services as the most appropriate form of compensation.

Solution testing took the form of a demonstration field test: in a single chieftaincy over a period of 6.5 months. The research team initiated the test by conducting community meetings and a 2-day training course for the eight RHMs. The test was carefully monitored through meetings with RHMs and community leaders. A community survey and interviews with RHMs and community leaders were used to evaluate the field test.

The field test evaluation revealed that the PHC skills training for the RHM had served to broaden the community's perception of the role of the RHM in relation to children's health. For example, respondents perceived the RHM to be the primary source of information on ORT, and mothers complied well when the RHM referred their children for immunization. The newly-introduced growth monitoring skills were well received by both the community and the RHMs, and RHMs proved to be proficient and active in performing these skills.

The RHM support scheme the community chose involved the donation of communal land and agricultural labor toward the production of a crop to be given to the RHM, who could then sell the crop for cash. This plan did not quite reach fruition because the area chief, who alone has the power to direct the people to perform civic duties, was absent at the crucial field preparation period due to the coronation of a new king. The field set aside for the RHM was prepared by the community, but the RHM deemed it too late for planting. The chief and the community agreed that the RHM should remain active and that the community would prepare the field again for the next planting season. An adjacent chieftaincy, without any promotion from the research team, has indicated that it would also try the same scheme.

The following three recommendations were made to the MOH as a result of the study. First, RHMs should be trained to perform growth monitoring at the community level. This training should include local-language curriculum materials, careful referral guidelines, proper tools such as scales and growth cards, and adequate supervision and inservice sessions. Second, RHM inservice training should be revised to emphasize immunizations and ORT. Third, the Public Health Unit (PHU) should try to improve community support for RHMs. These efforts should include encouraging communities to devise their own, locally-appropriate forms of RHM compensation, considering ways to make RHM spouses more aware and supportive of RHM activities, and increasing efforts to keep the traditional leaders informed of and involved in PHU and RHM activities in their communities.

The study team emphasizes what is probably a key finding of the study, i.e. that only after community support for RHMs is improved should further efforts to establish community-based in-kind or in-cash contribution schemes be pursued.

\* \* \*

This study was conducted by researchers from the Social Science Research Unit of the University of Swaziland from April 1984 through March 1986. Further information is available from the principal investigators, Ms. Laurie H. Dunn, P.O. Box 4, Malkerns, Swaziland, or Ms. B. Dlamini Vilakati, Ministry of Health, Mbabane, Swaziland, or from Dr. Stewart Blumenfeld, PRICOR study monitor (Chevy Chase).

## Study Abstract

### COMMUNITY PARTICIPATION IN IMPROVING VILLAGE HEALTH WORKER SUPERVISION IN TANZANIA

Researchers from the Faculty of Medicine, University of Dar Es Salaam, conducted an operations research study to address the problem of inadequate supervision of village health workers (VHWs) in Bagamoyo and Hanang districts. The overall objective of the study was to improve the utilization and coverage of primary health care (PHC) services provided by VHWs by improving VHW supervision. The study relied on extensive participation of villagers, village governments, VHWs, supervisors, and Ministry of Health (MOH) decisionmakers.

Three sets of information were used to analyze the supervision problems. First, supervisory decision variables were clarified through a series of large group discussions attended by PRICOR investigators, MOH decisionmakers, and project leaders from the study districts. Having identified 15 variables through this exercise, the PRICOR team developed questionnaires directed to supervisors, VHWs, and villagers. The ratings given to each supervisor for each supervisory decision variable were weighted depending on the position and education of the respondent. By this method, the opinions of those who had the best opportunity to implement changes in the supervisory system were given the most weight. Weighted averages on a scale from 1 to 5 were calculated for all 15 variables. As a result of this survey, two supervisors with poor performance ratings were replaced.

The second source of information was a survey of VHWs to determine their performance levels in 10 essential PHC activities. VHWs were asked how many times they performed a certain activity, such as health education or oral rehydration therapy (ORT), within a fortnight (2-week period). For example, in Bagamoyo district, an average of one diarrhea patient per fortnight per VHW was treated. In Hanang, the average was 3.6 diarrhea patients per fortnight per VHW.

The third source of information was a limited analysis of the VHWs' coverage of several PHC services. Malaria treatment, nutrition monitoring, environmental sanitation, and latrine construction were assessed from the findings of three existing surveys conducted in Bagamoyo district. Coverage figures for home visiting, health education, and ORT were calculated using VHW monthly reports. VHW coverage was highest for latrine construction (78 percent of households had latrines) and health education (65.5 percent of the expected number of health education sessions were conducted by the VHWs).

Based on these sources of information, the PRICOR team, decisionmakers from the MOH, and PRICOR consultants identified seven constraints to good supervision in Tanzania: time, fuel, stationery supplies, drug supplies, equipment, travel allowances, and vehicles. The participants determined the maximum amounts of time and money available for supervision in each study area.

With the information gathered from the problem analysis, the PRICOR team proceeded to involve communities, VHWs, supervisors, and decisionmakers in setting goals for the supervision of VHWs. Ten PHC goals were placed in priority order according to their importance and feasibility as judged by decisionmakers. Immunization coverage was given the highest priority, followed by ORT utilization and latrine construction. The PRICOR team then went into the study villages and assisted the villagers in setting PHC goals for their communities for each PHC priority activity in terms of percent coverage and utilization. This exercise created a great deal of interest in the activities of the VHWs among the village leaders. Supervisors were asked to set PHC goals for the VHWs under their supervision, bearing in mind the goals set by the villagers and the constraints of supervision. These goals were discussed by PRICOR researchers and decisionmakers using a nominal group process.

Six influential decisionmakers from the MOH, the research team, and the PHC supervisors participated in goal setting for the supervision system. In this exercise, the participants looked at two hypothetical supervision teams that differed in their supervision aptitudes and in one of the supervision decision variables. The participants then gave their assessment of what it would take to raise the performance of the poor supervisory team to that of the good supervisory team. In another exercise, the decisionmakers, the PRICOR team, and supervisors used nominal group process (Delphi technique) to arrive at a revised supervisory system based on the inputs from villagers, VHWs, supervisors, and decisionmakers.

As a result of the study findings, it was possible to implement significant revisions in the system of supervision in Bagamoyo district. The number of supervisors assigned to the project area has been doubled. The number of supervisory visits required has been increased and each supervisor now visits his or her assigned sites at least twice a month. Supervision schedules have been developed and each supervisor is required to prepare monthly work plans and monthly reports. A checklist for use on supervisory visits has been developed and is now in use. Supervisors have been provided with bicycles. The budget for supervision of VHWs has also been increased.

The village people are now significantly involved in the supervision of their local VHW. Village health committees are active and assist in the supervision of the VHW. Supervisors have formed good relationships with village leaders in an atmosphere of cooperation. A "team safari" plan, developed by the PRICOR team, has been adopted in all villages. According to this plan, a team composed of the village health committee, the VHW, the VHW supervisor, local teachers, and agriculture and water development workers visit every house in the village on a regular basis. On each visit, the team discusses the health and well-being of the family with the household members. The teams make a list of all cases requiring followup by the VHWs. VHWs report their followup activities to the village health committee before the next team safari.

\* \* \*

This study was conducted by researchers from the University of Dar es Salaam from January 1983 through March 1986. Further information is available from the principal investigator, Dr. F.D.E. Mtango, University of Dar es Salaam, Department of Epidemiology and Biostatistics, Faculty of Medicine, Box 65001, Dar es Salaam, Tanzania, or from Dr. Jeanne Newman, PRICOR study monitor (Chevy Chase).

ALTERNATIVE APPROACHES TO SUPERVISION OF  
COMMUNITY HEALTH WORKERS IN THAILAND

Village health volunteers (VHVs) deliver primary health care (PHC) services in almost every village in Thailand. However, the Ministry of Health (MOH) recognized that the quality of the VHVs' work was not as high as it should be, due primarily to an ineffective system of communication and supervision following orientation and training. The Institute of Nutrition of Mahidol University and the Office of Primary Health Care of the Thai MOH therefore undertook an operations research study to develop alternative approaches to the supervision of village health volunteers.

The joint University of Mahidol-MOH team analyzed the macro and micro PHC supervision system in eight provinces. This analysis included interviews of PHC personnel from the MOH, village-level volunteers, and villagers. In addition, a literature search was conducted on supervision. These surveys were supplemented by a 2-month anthropological observation study in eight villages of the four regions in Thailand. The research team and PHC experts and implementors then assessed the findings through meetings and seminars. Through these meetings supervisory functions and means were identified.

The following supervision problems were identified in Phase I of the study:

- (1) Supervision of VHVs by health personnel is highly formal and vertical. It is, in general, limited to monitoring and evaluating VHVs' performance of centrally-promoted activities and tasks.
- (2) Sub-district health officers, those directly involved in supervising VHVs, are not always well prepared to supervise VHVs' community health development work; supervision therefore tends to emphasize the quantity of work accomplished rather than the quality of community participation. There are no adequately detailed guidelines for officials to follow in supervising volunteers, as opposed to MOH personnel.
- (3) Supervision is frequently sporadic and often tied to specific activities, such as preparing a village for a special PHC contest. When no special activity is underway, supervisory visits decline dramatically.

The various groups participating in solution development agreed upon the following:

- An effective system of VHV supervision should include the following components: training and technical assistance, guidance, monitoring activities on site, coordination of village support, problem solving for non-technical problems, management support, evaluation, and motivation.
- The above components should be implemented by personnel at all levels (from community leaders to MOH officers) and through various media (e.g. village public address systems, radio, movies, television).
- An appropriate combination of supervisory agents may be required to perform all the supervision functions. All levels of personnel who have supervisory responsibilities should be properly trained.
- Supervision should, in general, be provided by community leaders and sub-district health officers, with supplementary support from district and provincial officers, and from available media. Regional socioeconomic and cultural differences should be taken into account when designing alternative village health worker supervision systems.

The technique of multiple criteria utility assessment (MCUA) was used to determine which supervisor is responsible for different supervisory functions. VHVs from the four study regions also participated in small group discussions during the solution development period. The resultant alternative approaches to supervision of VHVs were then presented to administrators and decisionmakers of the MOH by the research team. The research team then developed a general model for VHV supervision involving community participation in administrative supervision and health officer technical supervision, supported by communications media. From the general model, four different region-specific models were developed. These models will be field tested later this year.

The MOH administrators and technical officers involved in the study have agreed on the benefits of operations research in finding solutions to the problems of supervision. Provincial Chief Medical Officers have been particularly interested in the findings, as these are relevant to a comprehensive public health development project being implemented in selected provinces throughout Thailand.

\* \* \*

This study was conducted from January 1985 to March 1986 by the Institute of Nutrition of Mahidol University and the Office of Primary Health Care of the Thai Ministry of Public Health. Further information is available from the principal investigator, Dr. Kraissid Tontisirin, Institute of Nutrition, Mahidol University, c/o Research Center, Ramathibodi Hospital, Rama III Road, Bangkok 10400, Thailand, or from Dr. Jack Reynolds, PRICOR study monitor, (Chevy Chase).

COMMUNITY FINANCING OF PHC ACTIVITIES  
IN NUTRITION, WATER, AND SANITATION

Researchers from the National Economic and Social Development Board (NESDB) conducted a study to identify and test cost-effective models of community financing for primary health care (PHC) activities in nutrition, water, and sanitation.

The Thai Government recognized that nutrition, water, and sanitation activities were crucial to an effective PHC program, but the Ministry of Public Health (MOPH) did not have the funds to pay for these health interventions, nor would the interventions be successful without community participation and support. Thus, the purpose of the study was to identify a model or models of community financing of PHC activities in nutrition, water, and sanitation that would best mobilize community resources in support of these activities.

The solution development phase of the study employed three data collection activities. First, the MOPH sent a letter to all 5,000 tambon health officers (tambons are subdistricts consisting of 6 to 10 villages) asking them to identify PHC funds in their jurisdictions. Over 70 percent of the health officers responded and identified over 12,000 funds. Next, more detailed questionnaires were mailed to the health officers asking for specific information about the 12,000 funds: their age and origin, management characteristics, procedures, diversification, and problems; as well as services they provide and households they serve. Completed questionnaires were received providing information on 4,631 funds. Finally, 63 in-depth case studies were carried out in 22 provinces around the country.

The data were analyzed to: (1) distinguish and describe existing viable models of community financing; (2) explain variations in viability and performance; and (3) propose alternative models for testing and implementation. The analysis showed that there are five types of funds:

1. Single-purpose funds (drugs, nutrition, water, and sanitation)
2. Single-purpose subsidized funds
3. Comprehensive PHC funds (support all PHC services)
4. Multipurpose funds (not limited to PHC)
5. Health card funds.

The data also showed that funds vary systematically with the primary health care activity they are set up to finance and the population they serve. For example, drug funds are the oldest, most numerous, most consistently profitable PHC funds in Thailand. They serve more households, have more diversified income sources, show more potential for diversification of services and less regional variation than nutrition or sanitation funds.

Nutrition funds are the next most widespread, located primarily in the northeast and north. They tend to be found in smaller, poorer villages, have little financial base for profitability or capital appreciation, be heavily dependent on labor contributions of women, and/or are decapitalizing. Ironically, the most profitable of these are often the least active in reducing malnutrition and the least successful by other PHC criteria. Finally, sanitation funds are the least numerous, with half located in the northeast. There are regional variations in working capital, profitability, interest rates, share purchases, and services. They tend to be located in larger and more prosperous villages. The most successful concentrate on providing loans at market interest rates for construction of water-sealed privies.

The research team examined various financing models and compared them against a set of standard criteria, including viability, profitability, services, coverage, and ability to support basic PHC services. They concluded that the best solution to the operational problem is multipurpose funds, for several reasons: (1) income sources are multiple and diverse, risk is spread, and income is likely to be more dependable, profits higher, and capital growth more rapid; (2) purchase of shares by households is encouraged by the real prospect of profit; (3) multipurpose funds conserve on scarce management time and skills--one multipurpose fund requires fewer people and less time to manage than 5-10 single-purpose funds; and (4) higher profits and rapid capital growth enable a multipurpose fund to support nutrition activity, even if it does not make money, and to make loans for sanitation improvements (particularly to low income people).

These results and recommendations were presented to and accepted by the MOPH. The Secretary General of the NESDB presented a summary of the findings and recommendations to the Thai Cabinet at the request of the Prime Minister. The MOPH has accepted the recommendation that existing PHC funds, particularly drug funds, should be encouraged to diversify and that new multipurpose funds should be established when conditions permit. Starting in 1985, the MOPH began carrying out these recommendations. In the solution validation phase of the study the research team conducted longitudinal testing of the various models of establishing multipurpose funds.

An interesting finding of the study was that the success of community financing was not the ability to put up a certain form or models of financing schemes, but the ability to transmit the concept of community financing to the rural community, who will in turn formulate their own finance scheme that is responsive to their particular needs and settings. The essential elements of such financing schemes are: (1) the pooling of capital and non-capital resources within the community that are rotatable and self-generating; (2) the ability to pool resources from within and without the community; (3) the community has the ultimate decision making power over the administration of the pooled resources; (4) the community has the ultimate decision-making power over the utilization and determination of activities of/for the pooled resources; and (5) the community has a central body or network of central organization to overload the pooled resources.

\* \* \*

This study was conducted from March 1983 through January 1986 by the National Economic and Social Development Board (NESDB) of Thailand. Further information is available from the principal investigator, Ms. Orathip Tanskul, NESDB, Krung Kasem Rd., Bangkok 10100, Thailand, or from Dr. Jack Reynolds, PRICOR study monitor (Chevy Chase).

## COMMUNITY ORGANIZATION IN RESOLVING HEALTH PROBLEMS

During the period 1983 - 1985, the Centro Latinoamericano de Economía Humana (CLAEH) conducted an operations research study in marginal urban neighborhoods of Montevideo. This study addressed the problem of inadequate community participation in the provision of preventive community health services by popular private polyclinics (community health centers). The overall objective of the study was to demonstrate that certain health problems could be resolved through strengthened community organization. This could occur by creating volunteer committees that would select, train, and supervise community health promoters. The researchers hypothesized that the action of the health committees and promoters would serve as a catalyst to change residents' attitudes toward health problems, to increase their awareness of factors affecting their health, and to encourage them to take action to resolve those problems.

CLAEH staff conducted a baseline survey of 849 households to determine community knowledge, awareness, and practices concerning health issues. In addition, direct observation was used to determine environmental health conditions. This included assessing sanitary conditions of local activity centers and the existence and conditions of community services that affect health (polyclinics, trash disposal facilities, availability of clean water, etc.).

Three marginal urban neighborhoods were selected to form a volunteer health committee; three similar neighborhoods were selected as controls. In each experimental neighborhood, the health committee was composed of individuals from the community suggested by community organizations, representatives from the polyclinic, and one CLAEH researcher. The committees then chose health pre-promoters (a large group from which the health promoters would be chosen). The number of health pre-promoters and committee members depended on the size of the community being served.

Training of the pre-promoters and committee members took place in the communities. The two groups discussed findings from the baseline study and direct observation and were asked what they saw to be health problems and solutions. The training, which was carried out in eight sessions held in each of the experimental neighborhoods, covered basic principles of health promotion as well as environmental and individual factors affecting health. The pre-promoters were also taught to identify health problems in the neighborhood, to work with groups, to raise community consciousness about health issues, and to develop viable solutions to the health problems. Those pre-promoters who responded best to training were selected as promoters.

After the training and selection of promoters was completed, the health committees and promoters in each neighborhood began to select the problems they would address and to develop action plans for resolving them. No formal agreements were made between the committees and the health promoters, although the committees were charged with supervising and supporting the promoters in their work. Health promoter tasks were not formally established by the researchers but instead were left to the health committees and promoters to define. Motivation for the health promoters was based on their interest in community service and their concern about health conditions. They were not paid or reimbursed in other ways.

The health promoters and committees worked with existing groups in the communities (religious, social, sports, etc.) and formed groups of individuals with a common health problem (e.g., parents of malnourished children). Through informal meetings, these groups discussed health concerns and identified solutions that could be implemented through shared community effort. Activities undertaken as a result of the work of the promoters and health committees included the creation of a community feeding center, fundraising activities for the polyclinic and the feeding center, the organization of recreational activities for neighborhood children, and the presentation to national water authorities of a community petition for the extension of the water supply in their neighborhood. The committees held weekly or bi-weekly meetings to gauge the progress of the promoters' efforts. The researchers attended these meetings and provided technical assistance throughout the intervention.

CLEAH evaluated the project through a repeat household survey 6 months after the promoters began their work. The researchers compared changes in the responses in the test communities with changes in control communities. Committee members, promoters, community members, and clinic staff were interviewed as part of the evaluation. The evaluation demonstrated that community organization around the issue of health increased the use of polyclinics and broadened knowledge of the clinics' services. Moreover, in areas where health committees were organized, people were more likely to appreciate the health aspects of environmental sanitation and malnutrition. In assessing the community organization experience of each of the three experimental communities, the researchers concluded that the health committees functioned more effectively when membership on the committee included representatives of existing community groups.

Although their formal involvement with the committees ended in late 1985, the CLAEH researchers have maintained a relationship with personnel from the popular private health services.

\* \* \*

This study was conducted from May 1983 through September 1985 by the Centro Latinoamericano de Economía Humana (CLAEH). Further information is available from the principal investigator, Dr. Obdulia Ebole, CLAEH, Casilla de Correo 5021, Montevideo, Uruguay, or from Ms. Lani Rice Marquez, PRICOR study monitor (Chevy Chase).