

PD-AAN-813

ISN 33302

CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) - PART I

Report Control Symbol U-447

1. PROJECT TITLE OPG Rural Community Health	2. PROJECT NUMBER 518-0002	3. MISSION/AID/W OFFICE USAID/Quito
	4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) EOP <input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING A. Total \$ 800,000 B. U.S. \$ 244,000	7. PERIOD COVERED BY EVALUATION From (month/yr.) Oct 78 To (month/yr.) Dec 82 Date of Evaluation Review Dec. 82 - May 83	
A. First PRO-AG or Equivalent FY 78	B. Final Obligation Expected FY 83	C. Final Input Delivery FY 83			

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR		
A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED

No unresolved issues. An End of Project Evaluation was carried out on Nov. 82 - March 83 as reported in following documents:

a) Consultant Report - Patrick Marname, Nov. 82 on OPG-0002.

b) A PVO's Experience - End of Project Report by HCJB, May 83.

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT		
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input checked="" type="checkbox"/> Other (Specify) See Evaluation Documents cited in Item # 3 above.	A. <input type="checkbox"/> Continue Project Without Change		
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify)	B. <input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan		
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C		C. <input type="checkbox"/> Discontinue Project		
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P				

11. PROJECT OFFICER AND HOST COUNTRY OR HOST RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)		12. Mission/AID/W Office Director Approval	
Dr. Kenneth Farr Chief, Health Division <i>K. Farr</i>		Signature <i>[Signature]</i>	Typed Name Orlando Llenza
		Date December 12, 1983	

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ISN 33303

EVALUATION REPORT
OPG 518-0002 RURAL COMMUNITY HEALTH PROJECT
ECUADOR
November 1982

Prepared by

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PRELIMINARIES

Purpose of Consultation: The assignment was to participate in the end-of-project evaluation of OPG 518-0002 with MAP International in Quito, Ecuador. The work was undertaken at the request of USAID/Ecuador who asked that the consultant assist project staff in the planning of their own final report, to be submitted in early 1983, and to write his own evaluation report. The two reports are to be considered together as the end-of-project summary evaluation.

Conduct of the Visit: I arrived in Quito on October 24th and departed on November 12th, 1982. Interviews were conducted with USAID personnel, Ministry of Health officials, Project staff (both expatriate and Ecuadorian), community leaders in project areas, the Provincial Health Officer of Chimborazo and others at the Vozandes Hospitals in Quito and in Shell. The Project staff and I conducted a one day evaluation workshop with project staff who met in Quito. Site visits were made in Chimborazo and Morona-Santiago provinces, and at the hospital center in Shell. Due to limiting weather conditions it was possible to visit only two communities where health workers were assigned in Chimborazo and one in Morona-Santiago. Project files at the office of AID and at Vozandes Hospital in Quito were accessed. Upon returning to the United States I was able to talk with Sara Risser and the project director, and Dick Crespo, formerly of MAP International in Quito.

Evaluation Background: The Project provides monthly and annual reports to USAID. These have routinely indicated progress in recruiting, training and assignment of health workers as well as programmatic change, coordination with government agencies and expansion of project interests. Problems and accomplishments are both covered in these reports. These reports are used

as a continuing evaluation as are staff meetings.

As an outgrowth of the MAP sponsored evaluation workshop and the need for an end-of-project report Project staff are gathering information and preparing a document that will focus on target achievement and overall accomplishments. This will supplement and, probably, counter the present report to some extent.

In March of 1981 I performed an interim evaluation of the Project. The purpose of that exercise was to make recommendations regarding the extension of USAID funding beyond the initial three year period. The Project at that time was fully operational but wanted additional time to observe these operations and to work out mechanisms for transferring or sharing service responsibilities with the government of Ecuador.

It was recommended that the extension be awarded. It was suggested (1) that Project staff exert more effort in monitoring and describing operations so that evaluation would be possible and (2) that they hold a meeting at which they would present to governmental officials and other interested persons a full description of their activities and accomplishments.

The meeting was held in late 1981 and Project staff have been collecting data and developing a plan for their self-evaluation. Many questions in the report were, however, not yet completely answered and it is suggested that the staff review it in preparing their own formal report.

The Method and Scope of the Evaluation: Data used in the writing of this report are drawn largely from informal observations and discussions with Project staff, government and AID officials, health workers, community members, and from Project and USAID generated routine reports. While quantitative information was used to some extent we are here more dependent upon subjective data and their analysis.

Most conferences took place in administrative offices and at arranged meetings. Field visits in two provinces afforded the opportunity to speak with staff and workers as they performed service and supervisory task. A day-long workshop was held with field and office staff.

Discussions with Project staff with longer term experience in Ecuador and other areas peripheral to the Project but with long residence in program areas provided considerable background for assessing historical and current socio-cultural conditions.

Guidance in focussing the attention of coverage of the observations and report was taken from the initial Proposal, and questions raised by AID staff. Materials developed by the Project staff and at the evaluation workshop conducted by MAP in July offered additional concerns.

A very thoughtful document prepared by Judith Tendler, Turning Private Voluntary Organizations into Development Agencies: Questions for Evaluation (AID Program Evaluation Discussion Paper No. 12), was provided to me at the end of my stay in Ecuador. While I received it late it has stimulated additional retrospective concern for attending to questions somewhat different than would have been the case.

The overall intent of this evaluation was to assess the Project and its outcome. Quantitative measures of output such as services rendered, population served, persons trained, and supervision provided are only briefly touched on here. These matters were discussed with Project staff and some recommendations were made regarding the collection and presentation of these data within the context of the log frame. Those data are being organized

by the staff. This report depends more on qualitative concerns and approaches. In trying to describe what the Project has done and how the special characteristics of its context of the implementing agencies and of the Project design may have enhanced or limited its ability to provide intended services and to insure that those services can be sustained, I have attempted to raise questions and to make suggestions that should be addressed by Project staff in the preparation of their report. I have tried to highlight aspects of the Project that appear important for both the success of this particular intervention and the replication of the effort elsewhere.

There are some important evaluational questions that I am not able to address because my observations and available data are limited. I cannot, for example, judge the extent to which Project coverage satisfies needs, nor can I compare the performance of the Project with other health service activities in Ecuador. Additionally, I am unable to assess the continuing health service activities in areas for which responsibility has been transferred from Project to the government. It is hoped that more will be done on these topics by the staff.

The complete openness and considerable knowledge evidenced by Project staff was unusual and worth comment. They were both patient and exceedingly reflective in answering to questions and they responded with alacrity to all needs for further information, documentation and insight. Without that even this limited evaluational analysis would have taken considerably more time, and might not have been possible at all.

PROJECT SUMMARY

The project was initially funded by AID in October of 1978. The original funding period was for three years but that was extended for one additional year and then one more quarter. Current AID funding will expire in December of 1982.

The Project grant was awarded to MAP International. The primary implementing agency is Vozandes Hospital. The responsible group at Vozandes is its Community Development Office. MAP International and a number of other Protestant Missionary PVOs working in Ecuador provide considerable in-kind support for the Project. At the provincial level the implementers have worked through Indigenous Evangelical associations to gain community acceptance and participation in Project activities.

Project supervisory and administrative staff consist of expatriates, with one exception, the supervising physician in Chimborazo province.

The original Project plan called for the extension of primary health care services over areas of five socially and culturally remote provinces of Ecuador. Services were implemented in four provinces, Chimborazo, Bolivar, Pastaza and Morono-Santiago. The fifth province, Loja, was dropped because of lack of available supervisory staff there and because the Ministry of Health altered its own program in the area.

The target populations with each projected area consist of non-Spanish speaking people (primarily Quichua and Shuara) who live in rural areas and have had very little access to health services and assistances provided by government agencies. Expatriate missionary groups had been providing some limited, largely curative health services in these areas. The Project was designed to expand and to rationalize the various efforts to provide health

services and to coordinate the efforts of the private missionary groups that had been operating independently.

The Project initially focussed exclusively on the provision of promotive, educational and limited curative services that were offered through health workers it had trained. Via cooperation with other programs and personnel working in the areas it has expanded its shared scope of concern to include water wells and pumps, home gardens and various other community development activities. Health services continue to be the primary interest of the Project and these other activities have been handled in a coordinated manner.

From the beginning, Project directors have seen their efforts as being supplemental to governmental activities in health services in Ecuador. The Project has been viewed as a means for extending services beyond the areas where the government was operating and as a test of the feasibility of employing indigenous personnel in a supervised program of training and service provision. It has explored various training methods and supervisory patterns and has attempted to tailor training content and worker task assignments to local conditions in the four areas and to individual capacities of health workers.

Summary of Results: During the first two and one half years the Project attended largely to planning, developing training materials and curricula, gaining community (and government) acceptance and producing some 130 trained community level health workers. Of these, 90 continue to function as either promoters or auxiliaries.

Project workers have been providing services since the first year but it is probably fair to say that it was during the third year that it became fully operational and had consistent coverage over the full target area. At the time it was becoming fully operational coordination with the government's

program increased rapidly and a system of shared responsibility developed. This meant that the independence of the Project was reduced, making it difficult to judge clearly its independent impact on population health and health behavior. Some project areas were fully assumed by the government's program, others were retained by the Project and additional supervisory and training responsibilities for other areas were taken over by the Project staff.

That there has been an impact on what the government program is doing is evident. Health services that the government has wanted to offer are more extensively offered than would otherwise have been possible. Participation of Project staff and adaptation of some of the materials in the government's program in some areas has influenced the character of training.

Some techniques and tactics of operation have also been adopted by the government. Government health workers are now encouraged to take interest in a broader set of activities under the rubric of health. They focus not only on personal health services and community health promotion but also are concerned with water supply and relations with other ministries as well as the MOH.

Acceptance by communities of the health worker idea has been universal among those that have them. This interest was assured to some extent since communities had to ask to participate but none have withdrawn as communities although some health workers have left the program.

Routine health service have been extended to be accessible to at least 40,000 people living in communities that have been served by the Project. Vaccination of infants and children in those currently served under the Project is extensive (BCG, DPT, measles, OPV).

Families appear to have high awareness of relationships between health and behavior, and health and environment and of means by which disease is

transmitted. They also recognize the efficacy of immunization as prevention. This awareness has led to an increased interest in latrine construction, tendency to separate animals from living areas and high participation in prevention programs.

As a result of the Project and assistance from community level workers and Project staff, there has been heightened awareness of services and support that were potentially available from the MOH and other government agencies. Communities have been assisted in soliciting help from these agencies including the Ministry of Agriculture and the Sanitary Works Office. They continue to receive help for water pump installation and latrine slabs. While enhancing the ability of communities to access the government for additional assistance was not a stated goal of the Project, it is a consequence of considerable importance.

Project staff have provided coordination of groups and agencies with direct health interest. They have also adjusted their own efforts so that the communities could take greater advantage of other development services. They have obtained assistance for their work from the Peace Corps and have utilized other AID project services to bolster community development work in coordination with their health service activities.

Persons who were initially volunteers with the Project have improved their own knowledge and skills through the Project. With encouragement and support from the Project many have received additional education, improved their literacy or become participants in the government's training and service program.

The health impact of the Project is hard to judge. Sophisticated data collection techniques have not been used and, even if they had been, it would be difficult to attribute any change to the Project because the populations

are being influenced by so many dynamic forces. It is fair to note, however, that there appears to have been no epidemic of measles since the beginning of the Project although there had been in the mid-1970s.

The Project has participated in the installation of water pumps and latrines. Latrines are found in every project area now whereas there were none in most communities before. Project staff report several improvements in sanitary practices and the condition of dwelling units.

In its relations with the MOH and provincial health offices, the Project participates in a coordinated effort of shared responsibility in the maintenance of community level workers and service provision. The Project has turned over to the government program some communities for which it was responsible and has assumed additional responsibilities in other areas.

As a result of the Project, local evangelical associations and participating missionary groups have developed a heightened awareness of public health problems and greater interest for supporting and otherwise participating in local development programs.

PROGRAM STRATEGY AND COMPONENTS

The Implementing Agency

Vozandes Hospital of Quito initiated the grant proposal under which the program has been implemented. Because Vozandes was not a PVO registered with USAID it was necessary to work through MAP International of Quito, to whom the grant was directly awarded. Vozandes, however, is the primary implementing agency.

*MAP
Training
part of grant*

Vozandes has been providing health care in Ecuador for 33 years. It began operating a small clinic to serve indigenous people in Quito in 1949. The existing 50-bed hospital in Quito was constructed in 1955 and the 25-bed hospital in Shell was built in 1958. Vozandes has also managed medical caravans that have covered various rural areas of the country. Since 1968 it has been training and supervising volunteer health workers in Morona-Santiago province. The professional and administrative staff of Vozandes consists largely of expatriates from the United States, Europe and Australia but there is an increasing number of Ecuadorian physicians and nurses and the hospital provides residency training for local physicians. Some Ecuadorian physicians are assigned to the hospital in Shell for their one year rural residency.

Vozandes is a part of the World Radio Missionary Fellowship, Inc., based in Florida, USA. It began broadcasting from Quito over 50 years ago and now operates a station, HCJB, that sends long and shortwave broadcasts throughout the world.

MAP International, based in Wheaton, Illinois, began working in Ecuador in 1975 when Vozandes asked them to assist them in developing workshops and programs in health and community development. MAP has had a long and continuing interest in these concerns.

The role of MAP International has been an important one. Initially, MAP's director shared an office with the Community Development staff of Vozandes in the Quito hospital. The Vozandes group drew heavily on his experience with project planning and organization. The MAP director in Quito during the first three years of project implementation had been trained in techniques of the Project. He worked closely with Vozandes people and participated in the preparation of training materials, curriculum development, training evaluation and the actual training of health workers. MAP has also sponsored training and evaluation consultants who have made clear contributions to the program. Personnel from MAP have also participated along with Vozandes staff in health auxiliary worker training offered by the Ministry of Health and have introduced project-tested methods of non-formal education into the governmental program.

Since the Project's major thrust has changed from training to supervision and maintenance and interests have broadened, the direct participation of MAP personnel has declined. MAP, in July of 1982, did sponsor a workshop on evaluation for project staff, however, and it continues to coordinate its interests and support with those of the program.

Both MAP International and Vozandes Hospital staff view health as a broad concern and as an integral component of community development. Their orientations have allowed them to move in different directions and to deal with an array of tasks that encourage them to adapt to changing conditions and to take advantage of emerging opportunities that should contribute to program success. Home gardens, water pump installation, literacy, housing, and animal care, among other things fit quite easily in their categories of health concerns.

MAP has made important contributions to an agricultural program in the Colta, Chimborazo area. It has provided initial support for the creation

of farmer cooperatives and savings groups and it helps to fund supplies for an expatriate agronomist working with local farmers there. The agronomist has, in turn, worked with the health project in its development of community and family gardens and he has assisted with pump installation and maintenance.

MAP personnel have also worked with association members providing training in such tasks as telephone use, letter writing and preparation of solicitations to government officials. The purpose, and result, of this has been to enhance the ability of communities to access available government services.

A number of other missionary organizations also participate in the Project, providing services, personnel and other in kind contributions. These include the Gospel Missionary Union, Berean Society, Wheaton College of Illinois, Free Will Baptists, the Luke Society and the Missionary Aviation Fellowship. Georgia Tech with USAID funding has been concerned with water pump manufacture and installation. The Peace Corps and other USAID funded personnel have also been involved in various aspects of the program. The participation of the government and local indigenous organizations will be discussed more fully below.

Comment: Coordination of the contributions of the many participating groups, in itself, is a complex task reflecting a complex project. While most of the staff are not paid directly by the Project, they are provided vehicles and other support funds, including travel expenses, by the Project. These have been critical for Project operations and coordination. They have allowed the four distinct project areas to be implemented in a coherent and organized manner.

Participating staff from the several groups include professionals and

persons with long experience in working with health concerns of local persons.

Implementation Strategy and Provincial Evangelical Associations

In each of the four operational areas the Project has worked through the provincial indigenous evangelical association. These have been organized largely with the assistance of local Protestant missionary groups and have a strong religious component. They also have secular interests that have included, among other things, cooperative transportation organizations, agricultural and live stock improvement, radio communication and community education and development. In each province they existed at least several years prior to Project implementation.

The associations have had some responsibility for identifying communities that would participate, encouraging those communities to solicit Project leaders for participation and the generation of community health committees. Actually, much of the groundwork in Chimborazo and Morona-Santiago provinces had been done prior to project funding. Dr. Naula, the indigenous physician who has subsequently been funded by the Project and is the area supervising physician, had already generated community interest for a health worker program in Chimborazo. In his role as an affiliate of the GMU Mission in Colta, as a member of the Chimborazo association and as a practicing physician he had been working in the neighboring communities for some time and had encouraged support for the activities that were subsequently implemented by the Project. It was because of this interest that Chimborazo was selected as the first project area. In Morona-Santiago existing health workers who had received training on an individual basis from local medical missionaries and were also members of the local association provided entree to communities and links to the indigenous association that were further used in the expanded Project.

The provincial associations established "health commissions" that have provided a link between the Project staff, the local association and participating communities. Concerns seem, however, to be still taken up by the association as a whole and association presidents appear to have close direct contact with Project staff.

Comment: It seems all the original health worker volunteers came from communities where the association was strongest. It is not clear whether all the original volunteers were members of the association themselves or (in the case of the few women volunteers) were relatives of members although this is probable. As the responsibilities for supervision have changed, and some government trained workers have come under the Project staff, religious and associational affiliation have not been limiting factors.

Although I raised questions and looked for evidence during my two brief visits to the Project (1981 and 1982) I was able to uncover no patterns of exclusion or favoritism on the parts of health workers or community leaders regarding the provision of services or expected contributions to community projects. Both Protestants and non-Protestants persons participated in mingas (community work efforts) and health workers routinely visited all the homes in their catchment areas.

Project staff did note that there were some differences between their Project with association identification and the projects operated by Roman Catholics working with federations of Catholic men. Their territorial coverage, however, seems to be well defined, without overlap. The resulting competition seems to limit cooperation between them and they lack the advantage of learning from one another. Provincial health officials are sensitive to the territoriality and the different approaches of the organizations and tend to support the territorial boundaries to some extent.

In Bolivar province, conflicting orientations of expatriate missionaries have resulted in some difficulty that has had impact on the project. One missionary who had been working in the province for some years strongly believed that evangelical groups should not be concerned with secular affairs such as health programs. This has resulted in the departure of the expatriate who was nominally in charge of the project and its ties to the association in that province. It is to be noted, however, that the health workers in Bolivar continue to provide health services in their communities and several have had further training under the government program. The expatriate health worker supervisor continues to work with them as a supervisor and in the provision of inservice training.

The higher rates of participation in Chimborazo and Morona-Santiago provinces seem to be the result of strong associations with long histories of interest in community development. It was noted by several persons that the associations were notably weak in Pastaza and Bolivar.

The Project has demonstrated the feasibility of working through Evangelical associations in initiating primary health care programs. While evidence is not conclusive, it appears that this may be a best means of stimulating interest and participation of communities in these areas of Ecuador. Working through the associations has, however, both advantages and disadvantages. Where the associations are strong and pervasive they serve as a ready and cooperative means through which to implement health service programs is an efficient way. Where the associations are not strong and not pervasive initial work with communities may be difficult and the scattered participating communities difficult to manage. With the success of operation in those few communities others have however solicited to participate in the Project and in the government's expanding program of primary health care. Project staff

in all provinces have worked with additional communities to assist them in placing their members in the government training program so that they could obtain services such as those now provided by the Project.

It is clear that the associations have provided an avenue by which many communities have accessed potentially available benefits from this Project and from government agencies. They have also offered means by which Project personnel and others can reach large segments of the people and to learn about the special needs of communities. From the point of view of the government that is interested in extending primary health care more broadly throughout the country it can be reasonably argued that the associations have allowed implementation of service programs with greater ease, with more supportive responses from communities and with greater participation of the people through representatives than would have been possible without them. It is also fair to say that the intervention is popular with the communities that are involved and that many more have sought their involvement as a result of that manifest satisfaction.

Training

The initial training of health workers was planned to include didactic and practical sessions of several weeks duration at centers in the provinces from which trainees were drawn. Through close, interpersonal monitoring of the progress of the trainees the staff was able to assess their progress in understanding what was being taught and their mastery of skills in providing services and working with the communities. As a result of early experiences it was concluded that training would better achieve its goals if sessions were divided into several short periods that were highly repetitive and if non-formal educational techniques were introduced. The non-formal

educational techniques were implemented through the assistance of the MAP director and with the assistance of MAP supported consultants from Michigan State University.

The division of training periods meant that trainees did not have to spend such extended periods of time away from their families and communities and resulted in less disruption of their lives. It also provided greater opportunity for trainers/supervisors to monitor worker performance in the field and continually adapt training methods, content and materials on the basis of their evaluations. As a result of this system, staff learned that training needed to be considerably more repetitious than they had anticipated and they were better able to reinforce what workers had learned during their supervisory contacts. Continuous supervision represents a sizable part of continuing in-service training of the workers.

While it was possible in Chimborazo province to recruit health workers who had completed primary education and who were more than functionally literate in Spanish, such persons were not as available in other provinces. As a result, the program accepted persons who were less prepared to handle the sort of materials and procedures that had been planned and it was necessary to tailor their methods regionally and individually.

Many of the health workers increased their Spanish language capacity through program training. Some of the training, however, was also conducted in the indigenous languages of the trainees and some materials were prepared in those languages as well. Some of the workers have since participated in the national literacy program (Alfalit) or have gotten additional grammar school education as a result of encouragement by program personnel. In doing they they have increased their own capacities and have been enabled to meet (or come closer to meeting) minimum standards for recruitment into the government's program for health auxiliaries.

Several staff members have provided consultative services and participated in the actual training of persons enrolled in the government's training program, drawing on their experiences in their own project. They have introduced some of the Project tested, non-formal education methods into the government program as well. Some of their training materials are being incorporated into those used by the government.

Over 130 persons have been trained under this Project. Ninety are still active. Many have also participated in the government's health auxiliary training program. Project staff provide in-service training and supervision to health workers trained by them and by the government.

Comment: The training procedures employed by the Project represent an important set of experiments and adaptations. Descriptive documentation and formal analysis of the methods tried remains scant and therefore unavailable to outsiders who would find them of interest. In-service training also seems to be emphasized in the Project but is only briefly mentioned in the various reports provided. Criteria used in the evaluation of teaching methods and materials remain unspecified as are the means of assessing the abilities of individuals who have received the training.

Supervision

A major component of the Project has been its supervision of health-workers by trained health professionals who are seriously dedicated to working with indigenous Ecuadorian populations in rural and isolated areas. The Project has demonstrated its ability to maintain a supervisory staff that seems much superior to what is provided in other programs working in the same or similar areas of Ecuador.

Supervision is used not only for monitoring and holding accountable community level workers but is used extensively as part of the in-service training of those workers. Active and participatory supervision of the health workers appeared to be acceptable to them. Indeed, they regularly seek guidance and interact fully with their supervisors. In the instances I observed, workers needed help in many aspects of their work including diagnosis, provision of supplies, the completion of paper work and storage of materials. It appeared that this sort of supervision was sought equally by workers who had been trained only in the Project and those who had participated in the government's auxiliary training program.

Despite the considerable attention given to supervision it has been a problem especially in Bolivar and Pastaza provinces. In Bolivar the Project communities are few and widely scattered over difficult terrain. Because of their distribution, it is not possible for the supervisor to make more than one site supervision in a day nor to work the various communities as a circuit. This means that supervision per se represents a fairly low proportion of her professional activity while transportation takes a very large amount of her time. It raises questions that I cannot answer regarding the possibility of continuing, expanding and replicating such a project.

Project communities in Pastaza and Morona-Santiago are accessible only by small airplane. Weather conditions often hamper attempts to land and take off in those provinces. As a result a great deal of time is used in waiting. Rescheduling on an hour-to-hour basis is frequent. The Project supervisor in Morona-Santiago shares supervisory responsibilities with two government auxiliaries who were originally trained by the project and given further training by the government program. It appears that together they are able to visit community workers several times a year. The Project physician working there also makes regular visits to the field. He dedicates half-time

to this work, offering clinical services as well as providing supervision.

In Pastaza the Project has never had a full-time staff supervisor. The Project physician working there spends half his time as director of the Vozandes Hospital in Shell. The physician now working there indicated that most of his project time is dedicated to providing clinical services to the communities in Pastaza and that he has little time for direct supervision. Supervisory contacts in the field number only one or two per year. He provides clinical services in many more communities and the six that are served by community level workers. The Project physician working in Pastaza during the first 2-3 years of operations had a similar pattern.

Chimborazo workers seem to have had the most intensive supervision. The physician and expatriate nurse both dedicated the majority of their time to this work. The physician is now on education leave but the nurse has been supplemented by a nurse practitioner who has been there for the past 18 months or so. The government has recently assumed responsibility for much of the area that was formerly part of the Project and there are now only five workers being supervised by the two nurses. The communities are located close to Colta where the nurses are based so supervisory visits are made frequently. The nurses also work closely with the communities and the workers in other activities in a participatory fashion.

Comment: In-service training through field supervision constitutes a significant aspect of this program and is believed to contribute markedly to improved worker performance yet this remains both little celebrated and undocumented. While I have not observed the government program in Ecuador (other than those parts shared by the Project) I have found that such supervisory procedures are lacking in many programs elsewhere.

It is evident that the supervisory component is expensive in terms of professional time and that it requires high cost transportation systems including planes in the Amazonian area and 4-wheel drive vehicles in the provinces of the Sierra. There is some question that the personnel, at least, could be made available elsewhere at any possibly affordable cost.

Because of the potential cost factor in the absence of outside support could be critical, the efficacy of different patterns of supervision and in-service training should be analyzed. The different patterns found in the four provinces provide an opportunity to analyze some variations and should be exploited. This could be done in part by assessing worker activity records that are now sent to provincial health offices without analysis by Project central staff and through some observation based assessments of worker performance in the field.

The cordiality and collegial quality of interactions between supervisors and community level workers observed in this program are notable.

Service Provision and Worker Performances

Community level workers emphasize promotive and preventive health services. They work with local health committees in the promotion of programs of latrinization, pure water supply and general improvement of community health conditions.

Health workers are available to residents who seek assistance with acute health problems and referral but a large portion of their time is consumed in making routine home visits. The home visits provide opportunity to monitor pregnant women and infant health problems. During home visits workers also provide education and encouragement regarding health practices such as hand washing, water purification and storage, household sanitation and the care of pregnant women, and infants and children.

The amount of curative care provided by community level workers differs among the provinces. While Ministry of Health policy does not allow workers to distribute antibiotics and other curative drugs, the limited access of professional health personnel has led to relaxation of the restrictions in the Amazonian provinces. Project staff have differed also in their own attitudes regarding the dispensing of curative drugs. While they have felt that the addition of a curative component would give a boost to their acceptance by communities some have argued that it would not be appropriate.

Community level workers participate in vaccination campaigns with Project supervisory staff and government personnel.

The workers have maps identifying all dwelling units in their catchment area. They maintain records on all families in their areas.

Activity records are submitted periodically to the provincial health office. These include data on worker effort and health conditions within the community. Project supervisors sometimes help in the preparation of these records but they are not kept by the Project nor are they used in performance assessments.

Comment: Worker performance is observed by supervisors during their periodic visits. Family records may also be reviewed. There seems to be no attempt to perform systematic assessments of performance nor to compare the performances of workers under different conditions of work. While supervisors appear to have a good grasp of what is being done in their different communities and of problems encountered by the health workers, it would be desirable to have more systematic information. This could lead to improved supervisory and training techniques. The data that are routinely submitted to provincial

health offices could also be used by Project staff to assess performance and support needs.

Discussions with a few health workers suggested that they were well aware of health problems in their areas, that they monitored pregnant women and followed up on referred cases. They seemed to have good rapport with community leaders and with families they served.

All the health workers I saw were male. While they admitted that men had difficulty in dealing with female patients there seemed to be a general assumption that men worked better with communities and with health committees. It would be desirable to look further into this and to assess whether indeed, when primary concerns of a health project involve the care of mothers and their children appropriate persons are recruited into the program. It may be that the men have an easier time dealing with leaders but they may not be able to deal with some important health problems.

Coverage

Coverage is always difficult to assess in community health programs. Because of the changing responsibilities for supervision and coverage of this Project vis a vis the government and the interests of staff beyond the communities in which they are assigned community level workers, attribution of "coverage" is indeed difficult.

The Project has information regarding the number of persons living in communities served, the numbers of infants and children receiving particular vaccinations, the frequency of contact and a number of other parameters. Because the territorial and service responsibilities of the Project have changed so much over its life, however, it was not possible to judge from the available data just what is and has been its coverage.

Project staff participate in vaccination programs in communities where there are no assigned health workers. They also supervise workers who are considered a part of the government's program. Many of the 130 persons trained by the Project are now managed under the government program and persons from other communities access the workers and professional staff for curative care and for referral recommendations. At least two communities that were under the Project now have social security clinics and in Macuma the government has built a health center staffed by a rural physician.

Project personnel are now ordering their data on vaccination, supervisory and community level worker treatment of the population. They are working with their own census data maintained by workers for their catchment areas. While these data will provide additional understanding of coverage, they give only a partial picture at best and they need to be supplemented by a more detailed description of all Project staff responsibilities and activities which cover a considerably broader area.

It is clear that the Project is reaching some populations that are culturally and geographically remote, populations that would not otherwise receive only western health services. The Project requirement that communities solicit to participate means that the most remote do not take part. It may also mean that the services are not implemented where they would be most disruptive of existing cultural patterns and social organization. Solicitations are still frequently received by the Project, indicating that communities are interested in participating and coverage could be expanded if resources and regulations allowed.

The Role of Women

Personal health services provided by community level workers are aimed largely at improving the health of infants, young children and mothers.

The care of children generally involves conferring with mothers and instructing them in the manner of applying treatment and improving care practices. There is, however, a notable lack of females among the Project trained and an expressed bias in favor of males.

Much of the promotional effort of the Project is carried out with men, including that having to do with water pump concerns, latrinization, housing of animals away from living quarters and gardening. Household cleanliness, care of infants and children and promotion of care of mothers and pregnant women, however, involves direct contact with women.

Expatriate females working in the Project carry out a lot of the face-to-face work with the women in the communities in their participation with the Lecheavena Program and mothers' club activities. They also interact with women during their supervisory rounds and are sought for personal services.

The government's health auxiliary program also has a notable predominance of male participants.

The lack of females among community level workers was attributed to the fact that women were less likely than men to speak Spanish and to the preferences of communities who nominated persons to the Project.

It is somewhat surprising that women in Chimborazo do not participate more frequently as health workers. The GMU in Colta has long had female expatriates who speak Quechua. Some decades ago, it was reported, women were assigned to the mission because supporting churches were expressly interested in working through the women in the area. While the missionary women continue to work with local women, there seems to be no explicit concern for their lack of participation as community level workers.

Additionally, men of Chimborazo often migrate seasonally to the coastal area. This being the case, it would be expected that women might be more

consistent workers.

The expatriate women working in the Project appear to have considerable rapport with both male and female residents of the communities and to work well with male leaders and workers. They are sought for assistance and they seem to be fully accepted as qualified professionals. Their work with women is an important aspect of the Project which should be recognized by those who are concerned with replication and expansion.

While the failure to include many women as community level workers might be considered, at this time, to be culturally appropriate it should be noted that with the expansion of formal education, especially secondary, is resulting in increased numbers of Spanish speaking women in all provinces. This should be making it much easier to involve women in health auxiliary programs. In the two provinces visited during this recent observation there were women in each community who had Spanish language ability.

In Pastaza it has been difficult to find men who were proficient in Spanish yet Project personnel managed to produce training materials that they could use with those non-Spanish speaking men and staff were sufficiently proficient in the local idiom to perform the training or to bridge differences in language ability.

Recognition of Traditional Health Practices

As was noted in an earlier report, the Project appears to take no formal notice of traditional health practices and beliefs and has made no attempt to work with indigenous health care providers. As far as I could tell, this situation persists. This is not to say that field personnel are insensitive or totally unaware of local practices but they seem to have made no concerted effort to understand just how disease and health are viewed by local people and to cooperate with curers or midwives.

Doubtless, accommodation of indigenous beliefs is made through community health workers who have grown up in the cultures and have received training in western health care. Dr. Naula, the MD in Chimborazo, has obviously been able to some extent to bridge the different systems and to enhance the cooperativeness of western medicine. Others with long experience and sensitivity have also managed to incorporate their own understanding and experience with local people into their practice and training. Still, it would be useful if project personnel would elaborate more clearly just what local beliefs and practices are and how they are accommodated.

It was observed by one project staff person that in working with Ecuadorian health professionals in the area she taught those professionals about local birthing postures and family expectations thus enabling them to deal more effectively with patients. It would be well if this sort of thing were expanded and systemized so that it could be routinely incorporated into health worker training at all levels. It may well be that much of the appreciation for local customs is implicit in the training practices but this could not be observed.

Tailoring training to different groups of health workers has also probably contributed to making it more relevant and appropriate to local conditions and allows more individualized attention to different practices and belief systems but this is not documented.

Relations with the Government and Impact on the MOH System of Primary Health Care

Through informal contacts and formal presentations the Ministry of Health has been kept apprised of Project plans and operations. Some officials have taken advantage of opportunities to make site visits to observe training and service provision activities.

The professional staff of the Project has contributed consultative/ advisory services in the planning and policy making regarding the MOH auxiliary health worker program and in the preparation of training materials. Some members have also participated in sessions of the government health aide training program.

Promoters who were initially trained by the Project have often had subsequent training under the government program. Some of these persons have been sponsored and partially funded through funds secured by the Project. Project supervisory staff in all provinces have at least some responsibility for supervising workers who are now fully under the government program. In Morona-Santiago, the Project nurse has been designated the responsible nurse supervisor for all government workers in her area. She works with two other government-provided aides who also act as supervisors. She is also responsible for operating the government vaccination program there and maintains a bodega for storing government provided drugs.

While Project staff work with government sponsored community level workers in other provinces as well, their responsibilities appear to be fewer and less formalized.

In Chimborazo the majority of Project trained health workers have been further trained by the MOH program and most of those still functioning are not now formally linked to the Project. They are supervised by the rural physician in the town of Columbe, a few miles away from Colta. On occasions when the government's supply system has broken down in Columbe, the Project has assisted them. Project personnel have also worked with rural physicians and nurses so that they could deal better with local problems.

These cooperative arrangements between the government and the Project had enabled the government to extend its own program to train more workers and to expand coverage. It has also recognized the need for some flexibility in

recruitment, training and assignment of tasks to health workers. For example, in the Amazonian provinces where access to professional health care is severely limited health workers are trained to provide more curative care there than they are in other places. This seems to be a rather direct result of Project demonstration of the rationality of such a move.

It is evident that methods and materials developed by the Project have diffused to the governments program. Training materials now being prepared by the government incorporate many of the ideas employed in the Project. Project personnel have been asked to review and comment on these.

Government officials are increasingly realizing the appropriateness of continuing education and close supervision of community level workers as following the experience and demonstration of the Project. Whether they can handle these within their own system is, however, problematic. The expense of maintaining professional supervision and the lack of sustained interest on the parts of rural physicians raises questions about the probability of replication of this component.

The success of the Project in assisting local people to access government services more fully and in coordinating the services that can be provided has been observed by some of the MOH officials. As a result they have acknowledged that health should be conceived more broadly in their own training programs and that trainees should be sensitized to more interrelationships between environment and health and between technology and health. The extent to which this has been incorporated into the training program and health policies is questionable but it was recognized and noted.

In trying to assess the impact of the Project on health plans and policies, I attempted to obtain relevant documents from the Ministry of Health but these were not available during my visit. It is doubtful that

there would be specific attribution of ideas in such documents but they might be helpful in assessing parallels and seeing if there is truly increased interest in primary health care following this Project.

While this is one among many PVO operated health service projects in Ecuador it is considered by the MOH to be one of the most active and it seems that the government does have more contact with it and its staff than with others. As an extension of Vozandes Hospital it doubtless receives more attention than it would were it an isolated project operating in remote provinces. AID's sustained interest in the Project also stimulates more concern for primary health care in rural areas. The notable openness of the Project and the willingness of the staff to view their work as experimental and as a means of extending government capability and to turn over their responsibilities to the MOH program has contributed to especially good relationships. It has also led to a posture of receptivity on the part of officials. This being the case, it is incumbent on project staff to systemize their observations and to document them more closely so that it is possible to make informed judgements regarding the adequacy and appropriateness of their particular efforts.

Reporting and Data Collection

Quarterly and annual reports have been submitted to USAID/Quito on a timely basis and discussed routinely with AID personnel. The reports have addressed not only accomplishments and alterations of project scope and plan but have acknowledged problems as well. They have noted difficulties in training, problems in dealing with local people and differences with provincial officials in gaining acceptance for workers and the array of tasks they are expected to perform.

As a result of recommendations from outsiders, there has been some attempt to assess what they are not doing as well as what they have done. They have at least considered the population in each province that is not covered by the Project.

Systematic data collection other than counts of latrines, pumps and the populations in the communities served has been limited. There have been no systematic epidemiological or health practice studies.

Following the evaluation workshop held in July of this year, field staff have been writing more systematic reports of activities and accomplishments in their own areas. The workshop emphasized the need for good descriptive reporting and sensitized the staff to treat their observations as useful qualitative assessment. These field reports were in draft form during my visit and provided useful information as well as bases for discussion and comment in the development of my own impressions and in outlining their planned end-of-project report.

Project staff have made two formal presentations that were attended by government health officials and USAID personnel. The first was held at the beginning of the project and the second was held at the end of the third Project year. The purpose of the meetings was to inform the government of the plans and accomplishments and to insure that there would be coordination of the Project with MOH plans. It is expected that there will be another presentation shortly after the termination of AID funding. Informal meetings with Ministry and provincial officials are held frequently.

In the process of working with communities and providing services, some data are collected rather systematically. Each catchment area is mapped and censused and health workers maintain family health records for their areas.

Monthly activity and environmental change reports are submitted to provincial health offices by the community level workers. Almost no use is made of any of these data by the project other than in face-to-face supervisory contacts. They are not aggregated or summarized in their own reports. Much more could be done with them, especially in assessing coverage and planning for future effort. They could also be analyzed in evaluating replicability of the Project.

While one would discourage the sort of data collection appropriate to a large scale, controlled experimental situation there are many things the Project should be trying to assess. For example, births and deaths within the served communities could be monitored easily by workers who know their communities well. Also, they could report incidences of diseases against which they routinely immunize. For diseases that might be difficult to monitor in a case-by-case manner but which have manifestly high (or low) rates should also be reported. It is also possible to note clinical observations of nutrition levels of infants and children which now seem to be overlooked in reports. These and many other phenomena and often sufficiently dramatic in their presence or absence to be observed by trained professionals without conducting elaborate survey investigations.

The initial goals of the Project were stated in rather non-specific form. While clear quantitative targets were probably inappropriate in this sort of Project, the persistent lack of attention to specific levels and important changes does not contribute to the awareness of accomplishments or of specific problems. These were problems not only for their own assessment and planning but for outsiders who might be interested in replication. It means also that the Project can be more easily subjected to capricious political decisions regarding the sorts of care it is allowed to offer.

No one appears to be making comparisons of the progress of this project and its impact on its participating communities and those of other programs. Nor has there been an effort to assess systematically the continuing progress in areas that were initially under the Project but which have been taken over by the government. This represents missed opportunities for improving the evaluative analysis of the Project--for the staff to assess the promise of alternative methods of implementation.

Replicability

The Ministry of Health has in the past two years assumed responsibility for training and deployment of all community level health workers throughout Ecuador. The question of whether the groups implementing this particular project or other private organizations could replicate it elsewhere in the country is, therefore, moot. Replication by the government is a separate question.

Many principles and techniques that have been tried by the Project are being incorporated in the government's strategy for providing community level care. The MOH program has drawn on Project staff for advice and assistance, generally in an informal manner but as participants in training and as continuing supervisors of government trained auxiliaries as well. The resources of the Project have been used to expand coverage under the MOH program.

There are numerous features of the Project that could be easily duplicated in any program if they are demonstrated to be supportable and their results are demonstrably superior to alternatives. Working through existing local organizations, the step-by-step and non-formal training methods, training materials, supervisory patterns and service elements are among these. Also, the broadening of health concerns as implementation progresses should provide useful lessons for other interventions. The cooperation of private organizations in the development of service systems of interest to the government has also been demonstrated. Even if policies would not allow such private

organizations to be as fully responsible for health service projects they could be used to stimulate interest, to assist in the coordination of local groups and to supplement services provided by the government. Most of these features could be replicated without increasing costs of projected MOH schemes.

The Project has depended heavily on existing organizations covering wide areas. It has demonstrated that associations with a religious basis will include secular concerns among their interests. This takes advantage of a growing tendency, especially in the Sierra, to replace the haciendado system with more egalitarian system of mutual responsibility. Where the Project has had access only to weak associations it has been less successful. Because expansion was limited by government policy it is not possible to know if they could have generated greater participatory interest in those areas. The differential success experienced in gaining initial interest does raise a question about replication using the Project's strategy elsewhere.

There are many features of the Project that do not appear to be very costly as it now stands, yet replication would be very expensive. One of these is its dependence on a number of expatriate professionals who are willing to work this way would doubtless be difficult regardless of support. Those who are now working are provided special conditions that would not be available to persons employed by the government. These include schools for children and residential communities that offer considerable social support.

Implementation of the Project has depended on well equipped staff who are provided access to costly means of transportation including AID funded 4x4 vehicles and a system of air transport operated by MAP. The existence of radio communication networks maintained by missionaries and local Evangelical associations has been critical for Project operation.

Although the MOH has been expanding its capacity it is questionable if it could provide the same sort of support system for its personnel. The

intensity of supervisory coverage, a major feature of this Project, will be difficult to reproduce at what the government might consider affordable cost. Current efforts to utilize more sub-professionals in the supervisory system may offer a more feasible alternative.

The government program is now using MAF planes to transport a few of its own supervisors and can probably continue this. The capacity of existing personnel and aircraft to handle an increased load for expansion or replication is limited. The possibility of utilizing aircraft to access remote Amazonian populations has, however, been demonstrated.

Radio communication between central locations and communities throughout Ecuador exists. The network appears pervasive where Vozandes/HCJB works with local groups and it is reported that others also have extensive systems. These can be and are accessed for many purposes and by many groups not affiliated with the operators. These might not be limiting but they could represent a cost that must be considered in any attempt to replicate the Project or its essential features.

Assessment of Project costs and the essentiality of its components for other programs of equally probable success is critical. It will provide needed guidance for planning the expansion of primary care in a rational manner. Until now there has been little consideration of providing such an assessment and the Project has not been described in ways that lend themselves to cost analyses that would be most useful in assessing overall replicability. It is fair to say that the Project has not been called upon to do this in an explicit way. It would, however, represent a valuable contribution.

Conclusion

This Project has a number of striking features. Among these are its sheer scope and complexity and the ability of Project staff to maintain control of its operations in the midst of dynamic conditions and institutional relationships. The four distinct contexts in which it is being implemented have required such dramatic adaptations that it would be appropriate to think of it as a set of coordinated sub-projects, each offering different experiences and lessons.

It is important to note that the Project staff view their own role as transitory. They see their efforts as offering initial impetus for community and government interest in the provision of primary health care in areas where affiliated organizations have an interest. The Project, then, offers an opportunity to test implementation and operational techniques that will, in the long run, improve the government's capacity to expand coverage of its own programs. This is not to say that this particular Project is not distinctive or innovative: Although Project components have been tried elsewhere the particular configurations that have resulted from adaptation to existing circumstances represent novel cases.

The Project is meeting the terms of its plan. It is to be noted, however, that the initial plan was not a rigid one. As is often the case in smaller programs financed by USAID and implemented by private voluntary organizations, the plan left many parameters open and encouraged flexibility. This seems to have been especially appropriate for the Project, which proposed implementation in a number of areas that had many unknown qualities. Changing government policy and activities related to health, the varying availability of supportive resources and the inexperience of local organizations were all factors that required course alterations and changes in priorities as the

program developed. The Project has demonstrated the feasibility of adaptive programming. As a result government officials have, to some extent, recognized the need to tailor their own efforts to different conditions, which is something that they were not willing to do until its importance was argued and demonstrated by Project staff. It was a change that was observable between my two visits to Project areas and discussions with health officials.

The Project has coordinated the efforts of a number of expatriate groups, reinforcing their interest and capacity to engage in health and development activities. It has also demonstrated that the groups can work cooperatively with local Evangelical associations, which were important for gaining community acceptance and participation. This strategy has, however, met with uneven success and appears to depend heavily on the strength of existing Evangelical associations. The Project has not been able to work as well in areas where associations are weak nor has it generated alternative strategies that would serve as well. It is to be noted that this was not fully tested because Project expansion was curtailed when the government made the decision that only it could conduct training for community level workers in Ecuador. Whether more communities not affiliated with the Evangelical groups would have sought and found means to participate in order to emulate those that had promoters is an open question.

In its initial proposal the Project indicated that it would train government officials in the process of program operation and maintenance. This has not been done in any formal sense but government officials have been invited to participate and observe Project observations and some have done so. Additionally, Project staff have consulted often with various MOH and provincial health officials, describing their own activities and making recommendations for the government's efforts. Project staff have also worked with the MOH in

its efforts to expand coverage of primary health care and have assisted it in assuming responsibility for portions of the Project areas. In other areas the Project continues to maintain supervisory and other responsibilities for both the promoters who have received training only through the Project and those who have been trained in the government's health auxiliary program, thus becoming an integral part of the overall government program.

The Project has succeeded in reaching very poor and underserved populations in Ecuador. It has, however, not reached all such people even in the areas where it has some coverage. Communities that cannot be reached by motor transportation and aircraft are not likely to participate. That there are limits resulting from dependence on the cooperation of the Evangelical associations has already been suggested. The criteria that communities must request participation and that they must insure support for health workers also necessarily limits participation.

The Project does not appear to have tried in any conscious manner to adjust its own practices to indigenous beliefs nor has it made an effort to incorporate traditional health practitioners. Still, it seems that the program operates as an integrated adjunct to other sources of change and that it is accepted by the people it serves. Although at least one health worker has been rejected by a community there is no indication that there is a rejection of the principle of primary health care using community workers. Indeed, where original workers have left, communities have tried to have replacements trained.

There have been some studied, but sometimes inadvertent, features of the Project that have mitigated potentially disruptive impacts of intervention. That communities must solicit to participate means that they have generally already accepted what the Project offers and that they have had experience working with external groups. What could be something drastically disruptive

of local organizations and beliefs is also lessened because health workers are drawn from the communities they serve. The presence of a Quechua physician in Chimborazo and expatriates with long-term experience in other provinces doubtless contributes to sensitive implementation.

Many features of the Project are already being taken over and replicated by the government program. Since policies restrict training of health workers by those other than the MOH, the question of replicating by either Vozandes or other voluntary organizations is moot. The implementing agencies have, however, demonstrated their willingness to aid in expanding the coverage of the government's program and in trying to replicate some aspects in their participation. The availability of expatriate professional staff who offer participation should be recognized as an important consideration in the assessment of replicability and program maintenance elsewhere. Without that continuing contribution, conducting the intense supervision and in-service training that are large elements, replication could easily prove too costly for the government to sustain on a wide scale.

A serious criticism of the Project is that staff have not documented fully its activities, changes and special adaptations in ways that can be communicated to outsiders. They are to be complimented for the knowledge they have of what they have done and their openness in responding to questions but the lack of clear documentation has resulted in lack of recognition of successes and neglect of some probably important comparisons among results in the four Project areas and between this Project and others in Ecuador (and elsewhere). This should be rectified in their end-of-project report. ||

A less remediable fault is that of neglecting systematic collection of information on health conditions in the service areas. Perhaps some dramatic changes in particular diseases can be reconstructed in useful ways but variations among most specific health conditions that should have been sensitive to the services provided remain unknown. Such information could be valuable for impact evaluation and program design. Data that have been collected by community workers have generally been forwarded to government offices or they remain in worker's files, without aggregation and systematic analysis. These could be used to assess better Project coverage, worker effort, and service costs.

Persons Contacted

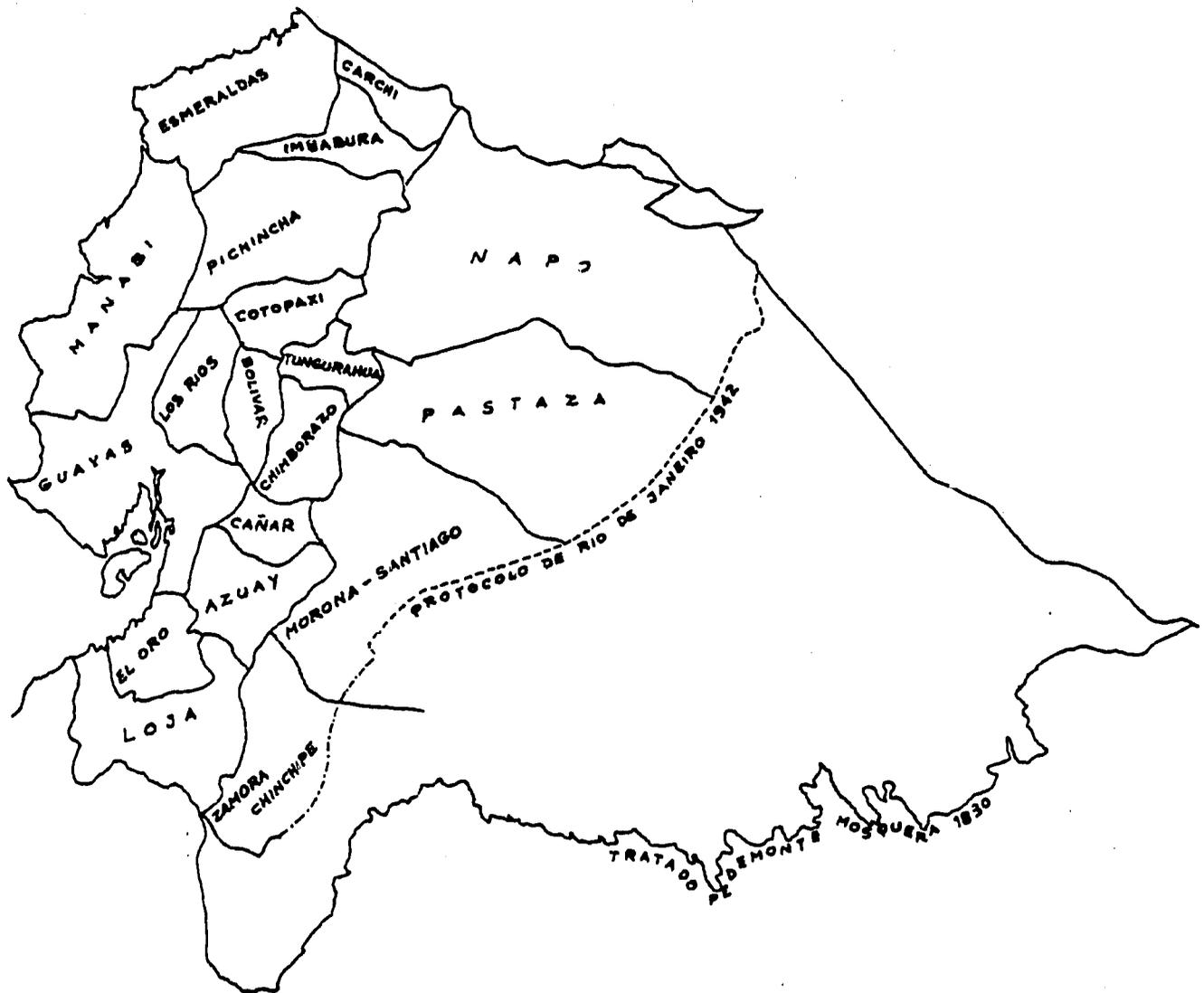
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PRIMARY HEALTH CARE WORKERS IN ECUADOR:

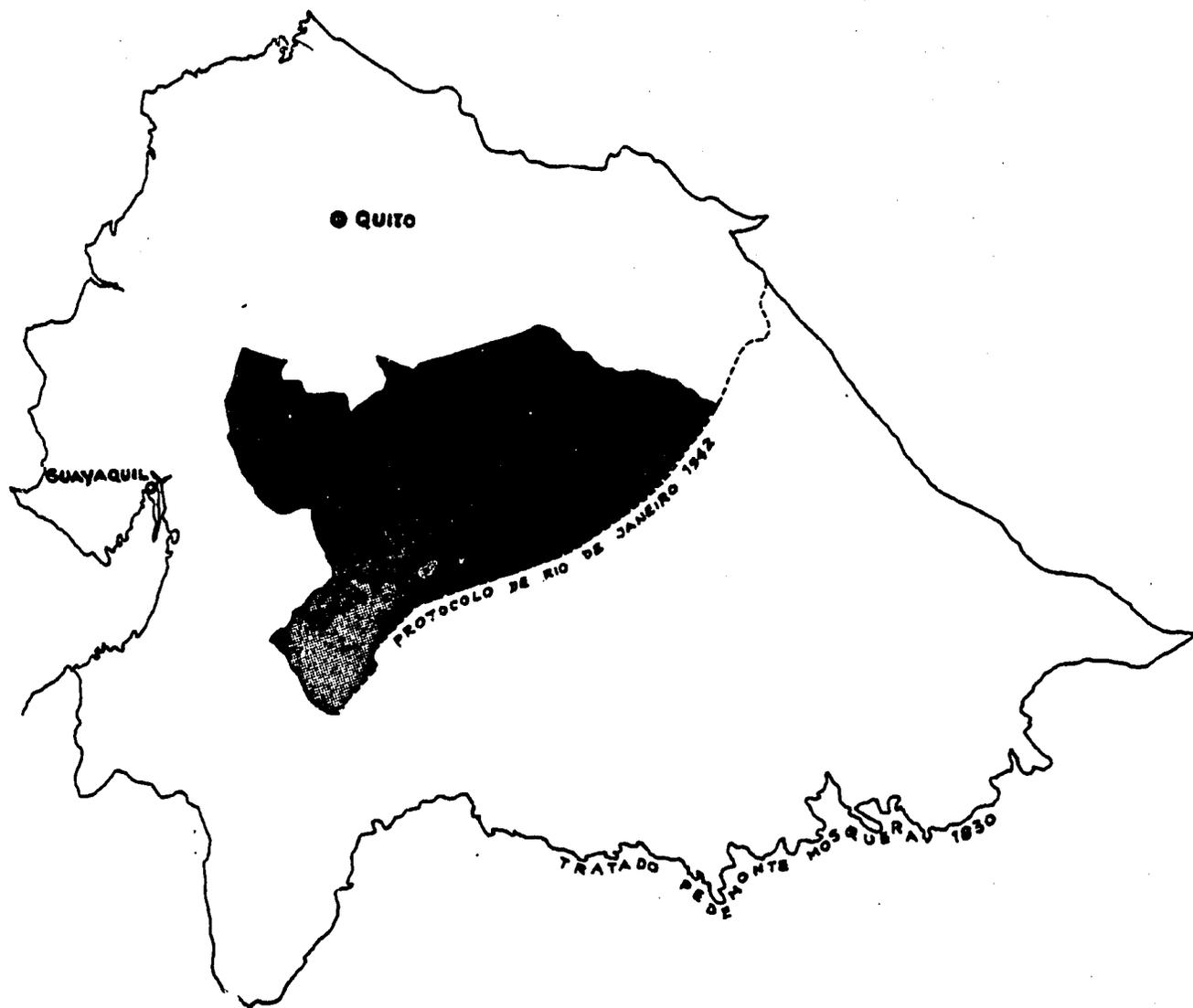
a PVO's Experience



May 1983

PRIMARY HEALTH CARE WORKERS IN ECUADOR:

a PVO's Experience



End of project report of US AID OPG 518-0002

Dedicated to the health care workers in Ecuador who provide
primary health care services for their communities.

"Development is the process by which people
gain greater control over themselves, their
environment and their future in order to
realize the full potential of human life
that God has made possible."

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Acknowledgements

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Bibliography

GLOSSARY OF TERMS

AIPSE	(Asociacion Independiente de Poblacion Shuar Ecuatoriana) Association of indigenous communities in the province of Morona Santiago
AIECH	(Asociacion Indigena Evangelica del Chimborazo) Evangelical Association of indigenous communities in the province of Chimborazo
AIEPB	(Asociacion Indigena Evangelica de la Provincia de Bolivar) Evangelical Association of indigenous communities in the province of Bolivar
CONADE	Development committee for the president of Ecuador
CREA	Agency of the government of Ecuador for the colonization of the Amazon region
FODERUMA	Development agency for the Central Bank of Ecuador
GMU	(Gospel Missionary Union) Principal organization in the province of Chimborazo and Morona Santiago through which the project worked
GOE	Government of Ecuador
HCJB	Administrative organization for the project grant
IEOS	Division of the Ministry of Health for sanitation and water
MAP	(Medical Assistance Program) Project grantee that provided consultive services for the project
MOH	Ministry of Health for Ecuador
OPG	Operating Project Grant 518-0002, official designation for the project by USAID
PAHO	Pan American Health Organization
PVO	Private Voluntary Organization
UNICEF	United Nations Children Fund
USAID	(United States Agency for International Development) Organization that provided the operating funds for the project

health promoter - The first level health care worker for primary care. Since 1980 these workers have received a stipend from the Ministry of Health.

health volunteer - The first level health care worker for primary care trained by the project.

Leche Avena - A milk supplement program for lactating mothers and children sponsored by the Ministry of Health.

water technician - A community member trained by the project with special skills in well site development, hand pump maintenance and hand pump repair.

PREFACE

For over 25 years HCJB's two hospitals have provided acute curative care for the people of Ecuador. In the last 10 years there has been a growing concern for reaching geographically and ethnically isolated populations who were asking for health care. A request from the Quichua Indians of the central highlands caused the health care team to become interested in providing ongoing health services for these isolated communities. Because of a previous involvement in the jungle region, this was taken as a model to develop a program in primary health care which is described and analyzed in the following report.

In writing the end of the project report the community development team of HCJB wants to share their experiences with others interested in development and health care in developing countries. Initially the project team began with five full time and two half-time team members. Over the four years some have changed and others have been added. I want to personally express my appreciation to each team member for their faithfulness and contribution to the project development: to HCJB for the privilege of developing this opportunity of service, especially Douglas Peters who encouraged us in the beginning phases; to MAP, International, especially Don Miller and Richard Crespo who provided the support needed in planning, implementation and evaluation; and to USAID for the funding which made the project feasible in the four provinces. Special thanks to Ken Farr and Manuel Rizzo of USAID for their support and interest in the project.

Craig Anderson, Alicia Ingram, Jon Sevall and, myself, Sara Risser, contributed to the writing of the report. I am deeply grateful to Craig who faithfully encouraged me and the others in writing, to Kay Landers who provided important editorial advice, and to Meryl Brown who kindly typed the manuscript.

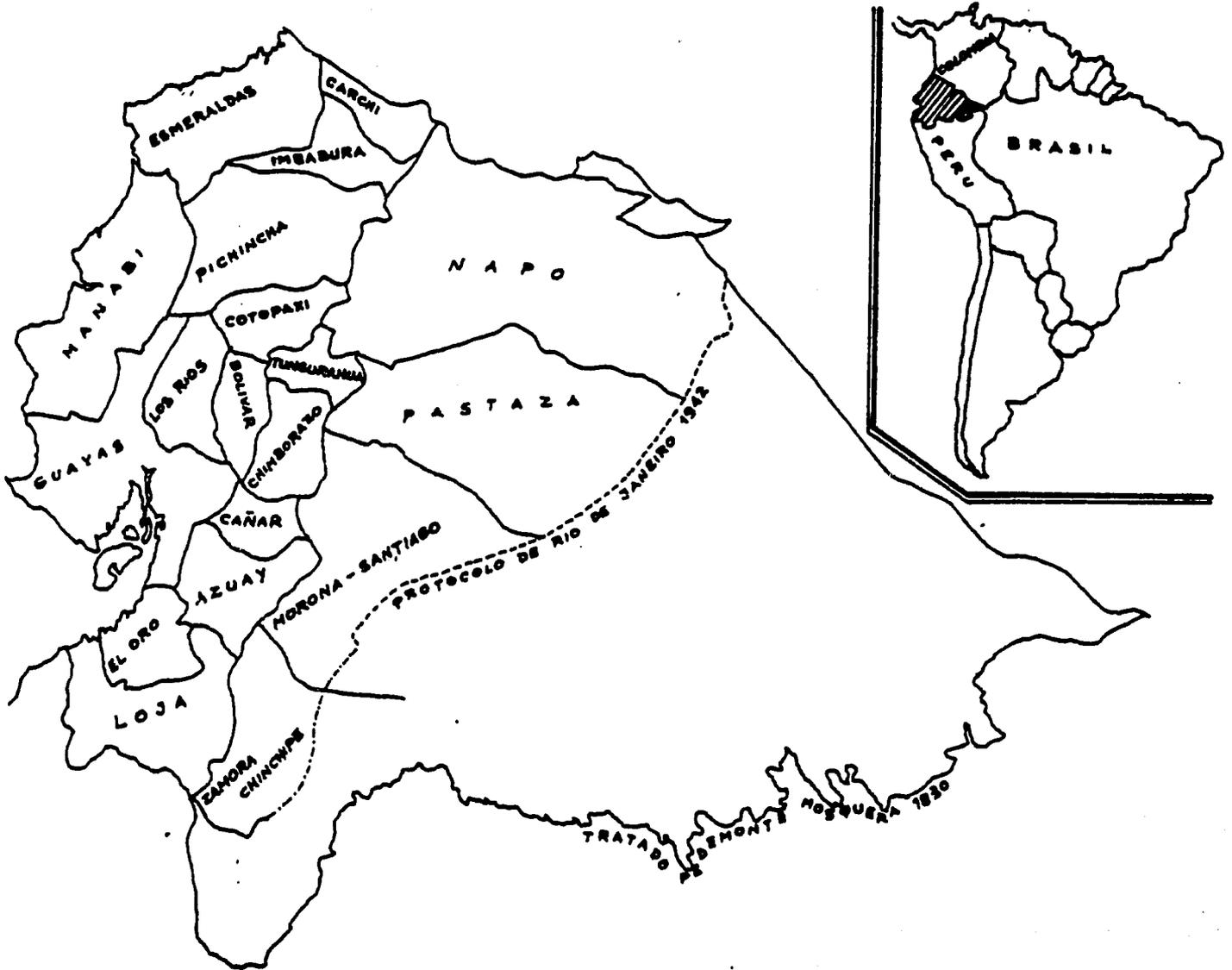
The contributions of Dr. Miguel Almeida, Dr. Eduardo Rodriguez and Dr. Jose Castro from the Ministry of Health were greatly appreciated. Their encouragement and support through the initial phase of the project and integration into the national primary health care program were invaluable.

A special thanks to the wonderful people of Ecuador, especially the communities in which we worked. Without their cooperation the community development team could not have had the beautiful experience of serving and helping others as well as learning from them. Their participation was an essential part of the project.

May 2, 1983
Quito, Ecuador

Sara Risser RN, MS
Director of Community Development
HCJB

ECUADOR



I AREA BACKGROUND

Ecuador is located in the northwestern part of South America, bounded by Colombia to the north, Peru on the east and south, and the Pacific Ocean on the west. The country is small, about the size of Colorado (2000,000 square miles) with a total population of 8,525,000 in 1982. The capital of Ecuador is Quito, located in the northern part of the Andes mountains which cross the country from north to south. This mountain range divides Ecuador into three distinct geographical zones: coast, mountain and jungle.

The coastal plain, located between the Andes mountain range and the Pacific Ocean, provides temperate climatic conditions for crops such as bananas, coffee, cocoa, sugar cane, rice and a variety of fruits.

The mountain zone is considerably colder than the other areas, and in the mountain plateaus and higher altitudes up to 13,000 feet, the majority of the population are Quichua Indians. This region lies between the eastern and western ranges of the Andes mountains, being 50-80 miles wide and 400 miles long.

The eastern zone is part of the Amazonian jungle which covers a large part of South America. It is comprised of gentle slopes, some steep cliffs, dense tropical forest, winding rivers, flat valleys and plains. Cash crops are not generally raised here, although cattle raising has become common in recent years. In all three regions the predominant occupation is subsistence farming.

About 60% of Ecuador's total population lives in the highland zone and 35% live on the coast. The jungle is quite sparsely populated. More than 40% of the people who live in Ecuador are Indian, and another 40% are mestizos. Just under 10% are of Spanish descent, and 10% are of African descent. The official language of Ecuador is Spanish and the majority of the people embrace the Roman Catholic religion.

CHIMBORAZO

In the highland province of Chimborazo 73% of the population is Quichua. They comprise part of a total Quichua population of three million, living in both the highlands and jungle areas. The province is characterized by high plateaus. The altitude range is from 2,500-13,448 feet. There are basically two seasons, the rainy season (Oct-May) and the dry season (June-September). The diurnal temperature variation is very great, with temperatures sometimes reaching as high as 70 degrees at midday and dropping below freezing at night. Besides the cold weather, there are often strong winds, periods of drought, flood, storms, frost and hail.

The terrain of the region is extremely uneven, with steep slopes and deep

ravines, especially in the high plateaus. There are few lakes and rivers and during the dry season water is scarce for irrigation of crops.

The Indian communities number about 400 and vary in size from 125 to 5000 inhabitants. The average community size is 746 people. Farmland is generally around the communities, though sometimes homes are built right on the farming plots. Each community has a municipal council which includes a president, vice president, and treasurer. These officials are elected annually. Everything in the community is organized by the council. Usually, if the president accepts a new idea, the rest of the community will follow his lead.

Two kinds of houses are found throughout the highland region. The traditional **chozas** are a small hut with earthen floors, small wooden doors, thick walls made of a mixture of a soft volcanic stone found in the area and adobe, and a thatched roof. The roofs are extremely slanted and the thatch hangs far over the walls for better drainage when there are heavy rains. The **chozas** have one large room which serves as a bedroom, kitchen, living room and area to raise guinea pigs and chickens. There are no windows and no source of ventilation other than the small door. Consequently, the inside is usually quite warm from the cooking fire. The floors are covered with straw which serves for sleeping. Later it is used for fuel in the fire. The other houses are usually made of adobe, brick, or cement with tile or corrugated tin roofs and dirt floors.

The traditional diet is based on products native to the region such as potatoes, barley, broad beans and several types of native tubers. Increasingly, purchased foods are forming part of the diet. These would include rice, noodles, sugar, salt, cabbage, onions, and rarely, fish or meat. Guinea pigs are raised inside the houses because of the warmth of the cooking fire. They are eaten only on special occasions. Milk and eggs are usually sold rather than consumed by the families who own the cows or chickens. Some families also own sheep, but they are valued more for their wool than meat.

Due to lack of hygiene and the contamination of water, the major cause of illness in the highland areas is parasites in the intestinal tract. Malnutrition does arise due to the diet which consists mainly of carbohydrates with little protein and this often exacerbates other problems. Other prevalent diseases are tuberculosis and other respiratory-related diseases such as pneumonia, bronchitis, tonsillitis and otitis media. Pytgerium, an irritation of the eyes caused by wind, dust, smoke and sun, is also common.

Traditional beliefs about Health

In the province of Chimborazo there are several types of traditional healing. When a person falls ill the family usually tries to cure him with

herbs or home remedies, according to the symptoms. If that fails they try using medicines purchased in a pharmacy or else consult with a traditional healer, of which there are three types, **curanderos**, **frigadores** and **parteras**.

Curanderos, or shamans are more concerned with finding the cause of the illness than with diagnosing the type of illness. Illness may be caused either by supernatural or natural factors. One natural cause is "bad air" which enters the body rather than passing by.

Another common cause of illness is sorcery. People will contract a **curandero** or shaman to harm someone else by making them sick. In case of bewitchment, it is necessary to go to another shaman to have him find the problem and cure it. Often the shaman passes a young guinea pig over the body of the patient for a period of about fifteen minutes, all the while invoking the spirits' help. The guinea pig is then killed and the insides examined to find the area of the greatest concentration of blood. The affected area of the animal corresponds to the area which is causing the illness in the patient.

Various treatments are used by shamans. Some will include the use of poultices, and various plants or flowers which are passed over the body. A strong liquor may also be rubbed on the body. Prescriptions of various medicines to be bought in a pharmacy and to be taken in combination is also common. Treatments may include prohibition against bathing for long periods of time and various kinds of drinks made of ingredients such as: herbs, eggs, crushed snails, bread blessed by a priest, urine of a young child, blood of animals, donkey's milk, and toenails of a certain kind of frog. Sometimes a cure is effected by simply passing a bundle of food or herbs over the body and then throwing the bundle away when it has absorbed the evil which caused the illness.

The shamans are concerned with illnesses which have a supernatural origin or are caused by sorcery. However, there is another group of healers which do not use spirits. They are called **frigadores**. Their name means "those who rub" and that describes their function. In cases of strained muscles or fractures which are not serious, they rub the area and tie it up with cloths. The **frigadores** often recommend the use of western medicine in the case of a serious fracture, cuts or infections.

Another important person involved in traditional health care is the **partera** or midwife. These women are usually quite well-prepared and experienced, although they don't sterilize any equipment and they have the custom of winding cloths very tightly around the mother's abdomen after the birth. Quichua women give birth in their homes with the aid of the **partera** unless there is some complication, in which case they go to a doctor or clinic.

BOLIVAR

The other highland province in which the project took place is Bolivar. It lies just to the west and north of the province of Chimborazo and contains many of the topographical features which describe that province. However, in addition to the high plateaus, the western part of Bolivar extends into the coastal zone. The altitude range is from 1,100 feet to approximately 13,000 feet above sea level, with all the consequent differences in climate, vegetation, etc. In most of the highland areas water is scarce, but there are a few natural springs. In the lower altitude water is more plentiful.

The people who live in Bolivar are predominantly Quichua and their way of life is quite similar to those who live in Chimborazo. However, the people are generally poorer, and much less culture change has taken place. There are various factors which contribute to this. An agrarian reform law which was passed in 1964 was put into effect immediately in Chimborazo. Land from the large haciendas was distributed to those who owned no land. However, the reform has taken much longer to reach the province of Bolivar because of its relative isolation. Isolation has also hindered involvement of Government and development agencies. A paved road connecting the provincial capital with the national network of paved highways has been finished only since 1980. Another factor influencing the lower level of acculturation in Bolivar is that, until recently, few schools existed and education within the formal, national system had little influence.

The communities of Bolivar vary in size from 50 to 180 people. The organization of communities follows the pattern of a council. These councils are not given a great deal of power by the communities, therefore outside entities dealing with these councils have experienced difficulties.

The Quichuas of this province also practice subsistence agriculture. Most families own a few small animals such as guinea pigs, chickens, and a few own a cow or sheep.

The diet is also quite limited and based on potatoes and grains. Protein is scarce because protein foods are usually sold rather than consumed. Exceptions are special events such as religious and regional celebrations when guinea pigs are eaten. For pregnant women and the cure of certain diseases, eggs or meat soup are believed to be efficacious if the family can afford them.

The major causes of morbidity and mortality are the same in Bolivar as they are for Chimborazo: gastro-intestinal diseases, malnutrition, tuberculosis, and upper respiratory infections.

Traditional beliefs about Health

The system of traditional beliefs and health care in Bolivar is essentially the same as Chimborazo. It incorporates **curanderos, frigadores, parteras**, medicines obtained in a pharmacy, natural drinks and poultices made from plants and herbs.

MORONA SANTIAGO

The province of Morona Santiago is located to the east of the Andes range in the Amazon jungle. There is an abundance of vegetation. However, the thick canopy of the high trees blocks the sun so there are relatively few small plants or shrubs on the forest floor. Also, rainfall is extremely abundant and has the effect of leaching the soil of salts and minerals. For these reasons there is little humus and the soil is unsuited for intensive agriculture.

There are relatively few large land animals, although small animals and birds live in the treetops. There is a great diversity of species of both animals and plants, but a low density of population for any particular species. Temperatures rarely climb above 85 degrees, but the humidity and high rainfall can give the impression of high temperatures.

The inhabitants of the province of Morona Santiago are primarily of the linguistic and cultural entity known as Shuar. They number approximately 45,000 within the province. The Shuars generally settle along rivers or streams in a dispersed pattern. "Communities" consist of a central point, usually an airstrip, around which families live, up to a distance of 2-3 hours walk. Traditionally, they practiced slash-and-burn agriculture and consequently moved their gardens and homes every 2-3 years. Now, because of the government land reform, people have been assigned plots of land, have become stationary and live in closer proximity to each other. None of the communities with which the project was involved have access by road to the national network of highways. The only means of transportation are walking, canoe in some areas, and small airplane if the community has an airstrip.

Shuar homes are built in a large oval shape with a palm thatch roof and dirt floor. The walls are made of wooden staves set into the ground about an inch apart to let light and air in. The houses are surrounded by gardens which are cultivated by the women. Land is cleared for gardens by the men, and the women then plant and care for them. The principal crops are sweet manioc, plantains and bananas. Maize is often cultivated as well as papaya, pineapple, peanuts, two kinds of sweet potato, tobacco and various medicinal plants. Usually each home has a variety of animals around, including several dogs used for hunting, chickens, ducks, monkeys, birds, sometimes pigs and in recent years, cattle.

An important part of the Shuar diet is sweet manioc, from which they make a beer called **chicha**. This usually mild beer is consumed in great quantities, especially by the men. Babies are given **chicha** from the time they are weaned. **Chicha** is also made from a palm fruit and plantains.

The principal source of protein in the diet is meat that the men bring back from hunting. The animals which are most abundant and used for food are monkeys, birds, peccaries, armadillos, tapirs or large rodents. Shuars also eat insects, grubs, large ants and snails. Fish are quite plentiful in the many rivers and constitute another important source of protein. Additional variety in the diet is due to the practice of eating wild fruits and plants when walking through the jungle.

The relationship between wives and husbands among the Shuars is an interesting one. Women are valued for their role in making **chicha**, tending the garden, and sometimes helping their husbands with hunting. Wife beating is not uncommon to keep wives under control, but wives are usually consulted and listened to when important decisions are being made.

Traditional beliefs about Health

The Shuars have quite an extensive and cohesive system of beliefs about illness, its causes and prevention, and death. They believe that most illness and non-violent deaths are caused by sorcery. However, "white man's diseases", such as whooping cough, measles, colds and dysentery are not attributed to witchcraft. They recognize the danger of contagion and have traditionally abandoned the house or isolated the person with symptoms of a contagious disease. The Shuars believe that disease may enter through any body orifice, especially in the presence of bad odors. There is a specific area behind the house which is used for defecation. They place a great emphasis on bathing daily in the nearby river and on washing hands, especially before serving **chicha**. The Shuars also have a complex system of taboos which, if broken, can cause illness and death. For example, if a man with a small baby touches a tiger skin, the baby will break out in a rash. Also, if a person laughs too hard he will get a fever. Illnesses caused by breaking taboos are not associated with spirits.

It is believed that a shaman sends spirits in the form of darts to cause illnesses other than death, and those mentioned above. Generally shamans are either healers or bewitchers, but both use a hallucinogenic drug. Hallucinogens are necessary in order to cross over into the "real" world of the supernatural forces which determine the events of the illusory or waking life. The spirit helpers which cause illness and death are invisible to non-shamans and are visible to shamans only when they are under the influence of a hallucinogen.

Shamans use spirits in the form of darts which they shoot into the victim's body to cause illness or death. The force with which the spiritual darts

are shot and the character of the spirit influence the degree of illness experienced by the victim. It is also possible for a shaman to change the magical darts into supernatural animals which attack the victim.

In order for another shaman to cure a patient, he must first ascertain whether or not the illness is due to witchcraft. It is only at night that a shaman can see clearly into the reality of the supernatural and can see a spirit object in the body of a patient. If indeed illness is caused by a spirit having been shot into the body, the curing shaman enlists the aid of his spirit helpers to suck the spirit out of the body. He then regurgitates the spirit object and throws it into the air so it can fly back to the shaman who shot it.

The Shuar also grow many herbs and medicinal plants and almost everyone knows how to use them. Sometimes a person will get a reputation for being good at treating certain kinds of illnesses and they are called "the knowing ones". Shuars do not use mid-wives. A woman gives birth in her own home with the help of her husband, his other wives, or her mother.

In 1977, a health assessment was done in the province of Morona Santiago. The most prevalent problems, according to community members, were diarrhea and stomach problems, fever and coughs. Medical personnel reported that gastro-intestinal illnesses, upper respiratory infections, and malaria were the most prevalent diseases. Another serious problem is leishmaniasis.

PASTAZA

The province bordering Morona Santiago to the northeast is Pastaza. It also forms part of the Amazon jungle and is very much like Morona Santiago except that it is not as hilly. Animals and vegetation are quite similar. The cultural adaptation of the groups living in Pastaza is very much like that of the Shuars. Most of the province is inaccessible except by small airplane.

However, the culture groups who live in Pastaza are not Shuars. The population in the northern part of the province is predominantly lowland Quichua. Another small cultural and linguistic group in this area is the Huarani. The southern part of the province is inhabited by the Achuars.

The language of the Achuar Indians is similar to that of the Shuars, with dialectical differences. Their way of life is also similar to that of their neighbors to the south, with a few differences such as house construction and the form of traditional implements.

The lowland Quichuas have adapted to the jungle environment in much the same way as the other groups who live there. Garden products are the same and hunting and fishing are sources of protein.

Traditional beliefs about Health

The communities of the province of Pastaza have only recently been organized with a system of a town council. Due to the obvious logistical difficulties involved in organizing and unifying a community, whose citizens live up to four hours away from each other, the community leaders don't exercise much control. Another factor which should be taken into account is communities in this jungle province are relatively new. Traditionally, people lived in small family groups where the older men exercised control. So, the idea of organizing and governing a community with a council is one that will take a long time to incorporate and function well.

The people who live in Pastaza province also put a great emphasis on cleanliness. Contagious diseases introduced by contact with "Europeans" have caused devastating epidemics.

Both the Achuars and Quichuas have a similar belief system to that of the Shuars in relation to etiology of disease. Shamans use spirit helpers to cause and to cure illness. The beliefs and processes of curing used by the lowland Quichuas are nearly identical to those of the Shuars and Achuars.

The diseases which are prevalent in Pastaza are gastro-intestinal problems, tuberculosis, upper respiratory infections and malaria. Leishmaniasis is also a problem, though only six cases in this province have received treatment through the Ministry of Health.

BACKGROUND OF HCJB AND MAP INTERNATIONAL

World Radio Missionary Fellowship is a mission organization which was founded in Ecuador in 1931. This evangelical mission originally was a Christian radio station and is better known as "HCJB", the call letters of the station which broadcasts throughout the world in 16 different languages.

In 1949, the organization formed a medical division to provide basic primary care to indigenous people in Quito. In 1955, the existing 50-bed Vozandes hospital was built in the northern part of Quito. A demand for acute general care in the jungle area resulted in the construction of a 26-bed hospital in 1958 in Shell-Mera, located at the edge of the jungle. Another aspect of the work of the Health Care Division of HCJB focuses on curative care for those living in rural areas of Ecuador. Medical caravans travel to different parts of the country to provide medical and dental services. In 1968 the staff from Hospital Vozandes-Shell became involved in training and supervision of volunteer health promoters in the province of Morona Santiago. In 1978, Hospital Vozandes-Quito established a training program for interns and medical students in conjunction with the Catholic University of Cuenca.

MAP International, based in Wheaton, Illinois, began working in Ecuador in

1975 when Hospital Vozandes-Quito asked for assistance in developing workshops and programs in health and community development. While MAP's primary emphasis is on health, it espouses a wholistic, integrated concept of development. Community health programs are understood to be those in which a total health care approach is taken, integrating promotional, preventive and curative health services. These programs include both services for the ill, education and community organization which lead toward self-sufficiency, community pride and human dignity.

With this philosophy as its basis, MAP International created a Department of International Development. Through it, MAP seeks to assist medically oriented evangelical organizations to initiate community health programs and to help them to be more effective in improving those community conditions which affect people's health. MAP provides assistance in planning and evaluating health-related programs, in development of community education curricula, and in training of community health workers. It also serves as a resource center of selected current materials in the international health and development field.

The Health Care Division of HCJB initiated the grant proposal to USAID under which the program has been implemented. Because HCJB was not a PVO registered with USAID, it was necessary to work through MAP International, to whom the grant was directly rewarded. The Community Development Department of HCJB's Health Care Division was the primary implementing agency.

Other organizations which have had direct influence on project areas should be mentioned as they play an important part in the history and background of the project. Gospel Missionary Union is a mission organization which has been involved in work in two of the project areas. Their missionaries have worked with Quichuas in the province of Chimborazo since 1902. Almost from the beginning, their work included medical treatment, though the primary aim was evangelization. GMU missionaries operated a clinic, several dispensaries and a mobile clinic for the Quichuas. These services were discontinued when the Ministry of Health assigned medical doctors to a year of social service in rural areas. The MOH also opened a health subcenter in Cajabamba, near the GMU clinic. In order to avoid competition, GMU closed their clinic and discontinued treatment.

Gospel Missionary Union also sent missionaries to the province of Morona Santiago to work and live among the Shuar. A need for health care in this area prompted the missionaries to provide treatment to the extent possible in the isolated situation in which they lived. A clinic was established in Makuma in 1932.

In 1958, Hospital Vozandes-Shell began to treat those patients who could be flown out to the hospital. But a need for prevention of illness at the community level prompted GMU to begin training and supervising health promoters

in 1968. Personnel from Hospital Vozandes-Shell participated in this training of village health workers.

In both of these provinces in which GMU has been working, they have helped form an Evangelical Association of Indians. These associations act as the governing body of the communities which are affiliated with them. The Association in Chimborazo was formed in 1966, and the one in Morona Santiago in 1962. These Associations were already well-established with an extensive infra-structure reaching to many communities in each province at the time the project began. Also, GMU has been instrumental in founding schools in both Morona Santiago and Chimborazo. For this reason a greater percentage of the Indians in these areas have had at least a few years of formal education.

In the province of Bolivar another evangelical organization, the Berean Mission, has been working with Quichuas for over 22 years. Their main goal is to evangelize and establish evangelical churches. They did not work at all in the area of health until 1977 when the Quichuas asked them for medical help. As the Berean Mission did not have personnel prepared to work in the health field, they asked HCJB to lend assistance. Health care was a great problem because of the isolation and dispersion of the Quichua communities. Not even the Ministry of Health was able to offer medical care. The only assistance which had been given was in the form of medical caravans from Hospital Vozandes-Quito. The problem was that the caravans could only cover a limited area on an infrequent basis. Permanent, community level health care was necessary for these Quichua communities.

An Association of Evangelical Quichua Indians was formed in the province of Bolivar in the year 1975. Therefore, the infrastructure of the association was not well developed at the outset of the project in 1978. The ramifications of the lack of infrastructure will be covered more fully in the following sections. Pastaza has had several different mission organizations working within its borders. Missionaries with the Plymouth Brethren and GMU arrived in the early 1950's to work with the Quichua and Achuar Indians. The Summer Institute of Linguistics have worked primarily with the Huarani since the late 1950's. There was no organized system of health care to cover this province before the project began. An Association of Evangelical Indians was not formed until 1981. However, there was some infrastructure due to the system of bi-lingual schools built by the missionaries in conjunction with the Ministry of Education of Ecuador. However, some of the more isolated communities where the project took place were still without a school when the project began. The school teachers in each community had access to a two-way radio network operated by Mission Aviation Fellowship and the Plymouth Brethren.

Mission Aviation Fellowship has operated a service of flights with small planes to communities in Pastaza and Morona Santiago from a base in Shell

since 1948. This organization has been instrumental in health care for the jungle provinces in that patients from distant and isolated communities have been flown out to Shell or to Quito to receive treatment.

HEALTH SYSTEMS IN ECUADOR

The Military system includes the police and military personnel and offers health care through a referral system of hospitals throughout the country. Civilians can use the facilities, but usually at a higher cost. Primary health care is given on a limited basis usually in the form of medical caravans to help in special programs, such as vaccinations.

The Social Security system focuses on curative health care through hospitals and dispensaries throughout the country. Individuals are affiliated with Social Security by employment and receive lower-cost care. About seven years ago, an extension program to cover rural areas was begun. A family pays a designated monthly fee which allows them to participate in the Social Security program. Dispensaries are the physical facilities found in the rural areas with referrals to hospitals.

The Ministry of Health offers curative health care to all. They also work through a system of separate MOH referral hospitals and dispensaries. This system is responsible for health policies. It controls the registration and practice of health professionals and the use of medicines. During April, 1981, a national decision stated that all would receive free medical care through the Ministry of Health, and this directive is in the process of being implemented.

For extension of coverage to rural areas a program for nurses and doctors was begun about 12 years ago under the Ministry of Health. Each graduate has to give one year of service in selected rural areas. In 1980 a program for training village health workers was begun to complement health care to rural communities. The program includes health promoters and rural nursing aides who act as supervisors for the promoters.

The private sector is basically made up of health care professionals who have organized clinics and dispensaries. The private health care system is found predominantly in the urban centers. This is due more to unwillingness on the part of the professionals to live in a rural area than to shortage of personnel.

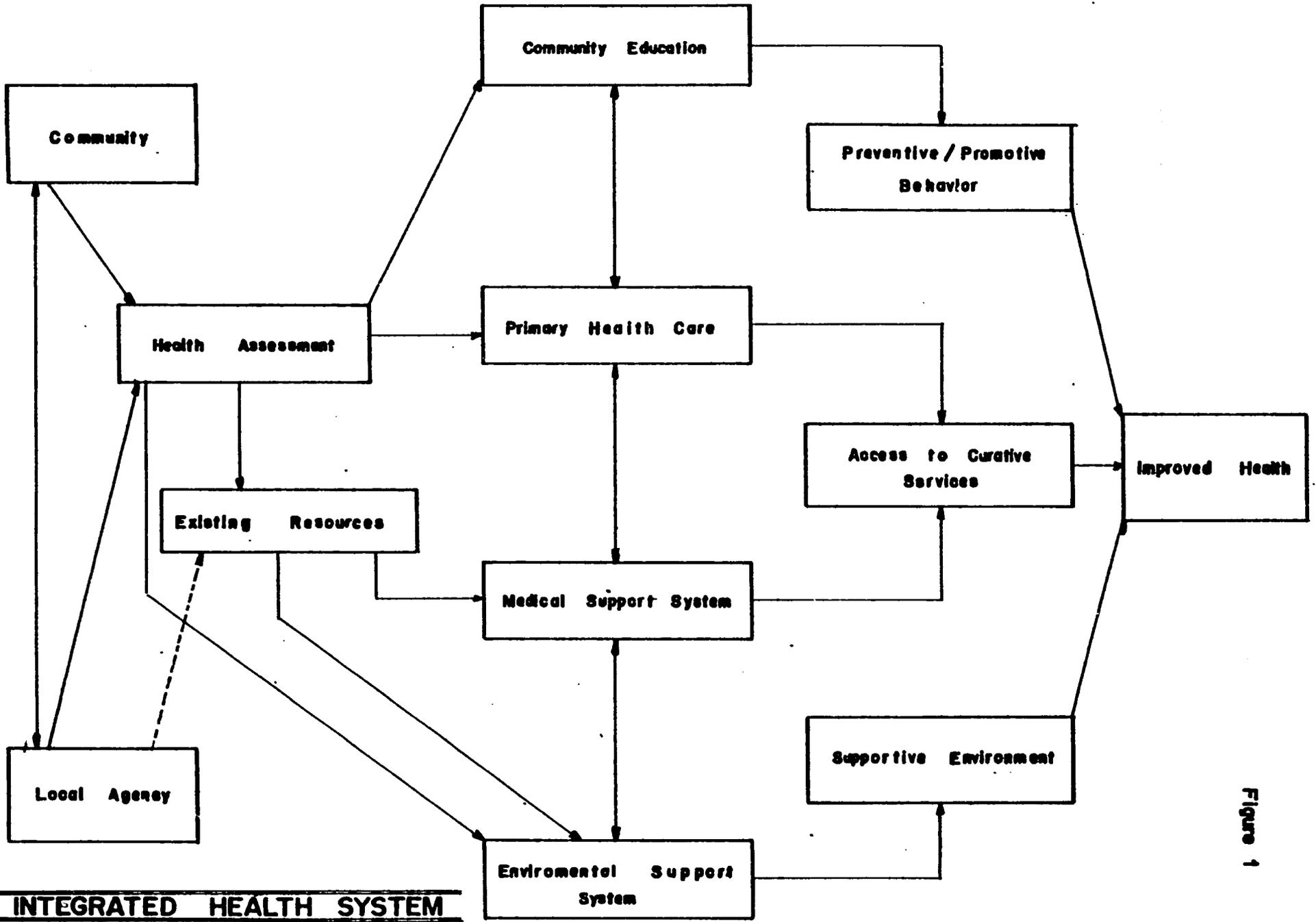
II PROJECT ORIGIN AND DEVELOPMENT

Out of a concern for unreached, rural populations isolated by geographic or ethnic conditions, medical personnel of Hospital Vozandes in Shell and in Quito became involved in two extension programs; first in the jungle out of the hospital in Shell and then in the mountain area out of the Quito facility. Using the existing missionary hospitals in each area as a referral center, medical caravans began to provide health care to those who did not have government health service. The extension of this hospital service was mainly curative oriented, but changed after several years to include teaching and utilization of government services such as vaccinations.

Training for thirty health promoters started in 1968 in the province of Morona Santiago. Although individuals had been taught on a one to one basis, a desire and need existed for a more organized program. Health manuals had been prepared in the Shuar language which were primarily curative oriented. The Shuar community wanted someone to help them with the more common illnesses which they were having such as stomach aches and bone pain. Simple medicines were introduced at this time since there was a need for immediate relief. Ten years later the program was reorganized and focused on solutions for the cause of illnesses.

The factors which helped initiate the project were: a request by the Indians of the mountain province of Bolivar to improve their health status, an interest and concern by HCJB and MAP to extend health care to the isolated rural populations, a desire by USAID to become more involved in health care in Ecuador, and the availability of personnel from several private voluntary organizations (PVO's). Personnel from MAP, International and HCJB proposed to USAID a three year pilot project for training primary health care workers in five provinces of Ecuador. The two agencies had already begun working on promoter training programs through nurses stationed in Morona Santiago, Bolivar, and Chimborazo.

For many years health has been equated with the operation of medical institutions. Whereas medical institutions are necessary to a total health system, they are inadequate to provide effective health delivery among large populations of people. Figure 1 visualizes a health system which integrates medical institutions with community education, primary health care and community development in a wholistic concept of health.



INTEGRATED HEALTH SYSTEM

Figure 1

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Programmatically, this model suggests the following kinds of things:

1. Communities need to be involved from the beginning in planning as well as implementing and utilizing health services designed for them.
2. An assessment of health conditions which exist in a specific community should precede and influence activities planned to promote health in that community.
3. Major emphasis should be given to non-formal, community education to help people adopt preventive and promotive health behaviors.
4. Primary health care, utilizing health workers from the communities, must be combined with institutional services to make accessible curative services for rural populations.
5. Environmental concerns (i.e. potable water, sanitation) are integral parts of a health care system.

The goal of the project was to "improve health in the Indian populations of five rural areas of Ecuador where existing mission agencies are already working." (See APPENDIX A for original Logical Framework Matrix.) The purpose of the project was to provide access to and utilization of specific services. Those services included community education, primary health care, medical referral system, and health related development assistance projects.

The proposal was to measure improved health through adoption of health promoting behavioral changes, a decrease in prevalent disorders, an increase in health related environmental conditions and a provision of services to the designated isolated areas. It was assumed at the outset that the communities would take an active part in the project. They for example would be involved in planning, choosing promoters and community education. It also was assumed that the preliminary surveys would provide an accurate assessment of the priority needs as viewed by the community members.

At the conclusion of the project the goal would be met if the following indicators were met: primary health care workers actively working in 100% of the targeted communities, medical referral services being used 80% of the time, and environmental development projects initiated in communities capable of implementing such a project.

CHOICE OF THE GEOGRAPHICAL AREAS

Originally five provinces were chosen for the pilot project. In all of these provinces missionaries have been working at least between 20 to 30 years in establishing churches, in formal education and in providing minimum health care. These specific provinces were chosen based on the desire ex-

pressed by the indigenous groups and the confidence established by the local missionaries. These provinces were isolated from existing government health services. In Morona Santiago, an indigenous association (AIPSE) was functioning with a health commission; in Pastaza there was no formal health organization, however, the local school system served as their infrastructure; in Bolivar and Chimborazo indigenous associations were functioning with health commissions in their beginning stages; the fifth province, Loja, had established medical caravans and a small clinic managed by OMS, International. Lack of project personnel caused the program planned for this province to be discontinued. The target communities were as follows: Morona Santiago - twelve communities in the Yaapi area and 17 in the Makuma area with a total estimated population of 2,700 accessible by air from Shell or Macas; Chimborazo - 50 communities around the Colta area with an estimated population of 30,000; Pastaza - 12 communities with an estimated population of 2000 accessible by air from Shell; Bolivar - 30 communities throughout the province with a base in Guaranda with an estimated population of 3000-5000. The total targeted population was 38,700 indigenous people.

COORDINATION AND COOPERATION

The project's goal was to coordinate its activities with ongoing work of locally based mission agencies. In each of the chosen provinces an established mission group provides an ideal link which had already gained the confidence of the people. The willingness of each of the mission agencies to work through their philosophical differences and coordinate their health outreach was of great importance. A unified and coordinated thrust was possible in each area. The prior relationship established by each of the mission agencies expedited the entrance and acceptance of the project. Even with this type of assistance the project took one to two years to obtain a sense of acceptance by the local communities.

In the province of Bolivar the work of the Berean Mission was built upon. In the first years several of the mission's personnel contributed part of their time for coordination and training. The Gospel Missionary Union (GMU) provided a strong link in the two provinces that progressed most rapidly, Chimborazo and Morona Santiago. This helped demonstrate that longevity of prior work in an area and utilization of personnel who had participated in that work could be built upon very advantageously to provide needed health care services. In Pastaza a less established work had been carried out by several mission agencies. The jungle terrain and fragmentation of cultural types within the province hindered local coordination and made coordination with the mission agencies difficult.

The Plymouth Brethren mission was the agency the project predominantly cooperated with in Pastaza. The local organization was the public school system, therefore even at the local level there was no single area wide organization to tie into.

The coordination with the local organizations outlined in the prior paragraphs on "choice of areas" and mission agencies noted above were only a portion of the participating organization. On the national level the Ministry of Health (MOH) and various government entities were included in the project. Under the MOH various sections cooperated quite clearly. The division responsible for all environmental health provided great assistance to the project in the area of water and sanitation. Government programs of milk supplement, *leche avena*, planned parenthood, and agriculture cooperated with the project in specific provinces to augment the health promoters' educational background. The project was then used to help implement parts of these MOH programs such as vaccinations and distribution of the milk supplement.

CENTRAL COORDINATION AND COOPERATION

Permission for training health workers was obtained from the general director of the Ministry of Health on December 8, 1978. This was preceded by several meetings with officials from various sectors of the health ministry; epidemiology, rural health, community health, rural development and nursing. As MOH directed their focus towards primary health care, a national committee was formed which included FODERUMA (a development agency of the Central Bank), the MOH personnel and several consultants from PAHO and other agencies. The committee became the contact group for development work until the committee was dissolved in 1981. After this date the community health department of the MOH became responsible for implementation of the primary health care program.

EVALUATION

The total development of the project was initiated, guided midway and concluded by evaluation sessions. Due to a limited experience in designing such a project, the original plan was intended as a guide which could be directed through periodic evaluations. The evaluation process has proven to be an effective tool in program planning.

The initial evaluation to obtain baseline data proved to be difficult and frustrating. National statistics were gathered, however in isolated areas they were very limited and about five years old. A household survey was conducted by local people, but even using the local people there was a great resistance to answering any questions. In those cases where a response was given it most likely reflected the response the interviewee thought was desired. Isolation also provided a large barrier to obtaining a true cross section of the population. Greater success in obtaining baseline information was obtained through personal contacts. Discussions with the indigenous associations and local missionaries provided a good cross check on all the statistical data gathered.

After ten months, two years, and four years major evaluations were conducted. Before these evaluations project personnel would either hold local evaluations or informal sessions with the health promoters or the communities to gather their input. These were held in Quito and consultants were brought in to help conduct the sessions and maintain objectivity. The two year and final evaluations were then supplemented by an independent evaluator brought in by USAID. These took place in April '81 and November '82 by Dr. Patrick Marnane.

Ongoing evaluation was done through on-site visits and progress reports. This was done at the promoter-supervisor level and at the project staff-director level. Project staff were given freedom in their planning, although monthly plans and monthly activity reports were submitted to the director. Since much of the evaluating was done through observation, the observed changes became a major part of the activity report.

III PROJECT CHRONOLOGY

The following chronological overview of the project has been keyed according to type of activity. In this manner specific interest areas can be easily traced from their origin and throughout the duration of the project.

C = Community Education

E = Evaluation

GOE = Government of Ecuador Involvement

P = Planning

S = Supervision

T = Training

W = Workshop

DATES	ACTIVITY
November, 1968 T	- Formation of the health commission under AIPSE (Asociacion Independiente de Pueblo Shuar del Ecuador) - First course for Shuar training 30 health workers - developed records and manuals in Shuar.
Feburary, March April 1969	- Committee for Development of Health and Welfare in the Amazon Region gave a three month course for rural nursing aides. The committee had representatives from U.S. Peace Corp, Hospital Vozandes-Shell, Ministry of Health at the provincial and central level. Cooperation with the Shuar Federation in Macas.
May 1976	-First Community Development workshop in Quito for

- W HCJB managers. Directed by Dr. Don Miller, MAP International; David Werner, author of Where There Is No Doctor?; and Dr. Dean Miller, Director of Health Education Program, University of Toledo, Ohio.
- February 23-25 1977 -Program planning seminar held in Shell at request of AIPSE and sponsored by HCJB and MAP, International. Dr. Don Miller directed the seminar. Health assessment plan designed.
- March, 1977 - Lois Price, nurse, to Makuma - headquarters of AIPSE. 23 health promoters functioning.
- May 17-21, 1977
E - Health Assessment household survey done by Dr. Wally Swanson and sons, Jeff and Todd. Were assisted by Shuar informants. Three communities selected by random sampling around Makuma were Kim, Saisaim, and Tunantza.
- June, 1977
GOE - Contact with CREA in Cuenca (Colonizacion en La Ecuatoriano Amazonica) in reference to health teaching for AIPSE. Received 20 water pumps for Morona Santiago.
- November 1977
E, GOE, T - Evaluation of health assessment. Don Miller helped plan a training program for Morona Santiago in Makuma.
- Analyzed the results of the household survey and non-structured community meetings. See Appendix B for the major findings of the household survey for Morona Santiago.
- Consideration of Yaapi for a cattle project.
- Consideration of Bolivar province for a health promoter course.
- Contact with USAID - Al Hankins suggested that we submit a proposal for primary health care. One page outline submitted for discussion.
- Contact with the Ministry of Health.
- Two Shuar started government rural nursing aide course in Azogues. Luis Punchera from Yaapi and Daniel Tiwi from Cuchaentza. Scholarship given by HCJB.

December, 1977
W

- Project personnel to MAP workshop on Community Development in Michigan, the Dale Mayfields, Martha Craymer and Roberta Hostetter.

February, 1978

- Martha Craymer, a nurse assigned to Guaranda, Bolivar. 1964 Toyota donated by World Concern assigned to Guaranda.

February 28 -
March 6, 1978
T, P, C

- Course with association leaders about concept of primary health care directed by Richard Crespo, MAP, International.

- Program design and budget done for Chimborazo.

- Reviewed Morona Santiago and Pastaza program designs and visited the areas. Discussion of program with Yaapi health commission about medicines, promoter service and pay.

- USAID presentation by Richard Crespo, MAP, International.

April, 1978
T

- First course for health promoters in Majipamba, Colta. 26 students taught by Dr. Naula, Roberta Hostetter and Ministry of Health personnel.

- First course in Vinchoa, Guaranda, 8 students taught by Martha Craymer, Dr. Cevallos and Ministry of Health Personnel.

May, 1978
P, GOE, W

- Richard Crespo, MAP, International reviewed project.

- Worked with Manuel Rizzo, Health Programmer, USAID on budget.

- WHO course on immunization.

- Met with Maria Barrigan, Nursing Director, MOH to discuss health promoter program.

- Preliminary visit to Saraguro, Loja.

- Sara Riser attended World Federation of Public Health in Nova Scotia. Role of PVO's and Primary Health Care were topics of discussion.

- Sara Risser attended MAP workshop and Congress.
- July 31 -
August 4, 1978
W. GOE

 - Community Development workshop directed by Richard Crespo on Primary Health Care and education. About 25 in attendance from GMU, Hospital Vozandes, German Volunteers, Berean Mission, AIPSE, Norwegian Lutheran Mission and the Ministry of Health. Dr. Naula, a Quichua doctor doing his rural year in Cajabamba was also present.
 - A first formal meeting with PVO's and Ministry of Health.
- September 15, 1978

 - Contract signed with USAID through MAP, International to initiate OPG 518-0002 on October 1, 1978.
- September, 1978

 - Request from MOH to visit jungle project areas.
- November 5-10, 1978
P. GOE

 - Health department, USAID and HCJB met with communities in Makuma, Tunantza, Corrientes, Saasaim, Bufeo, Conambo, Morete Cocha, Villano, Arajuno. These communities are in the provinces of Morona Santiago and Pastaza. During the visit Villano and Morete Cocha were designated to have rural aides. The team was made up of six from the Ministry of Health, six project personnel and one from USAID. Dr. Miguel Almeida, Director General of MOH was a part of the team in Pastaza.
- November 20-23, 1978
P. GOE

 - MOH and project personnel traveled to Chimborazo and Bolivar provinces for review of curriculum and to check out teaching centers.
 - Dr. Manuel Naula assigned to help in teaching and supervision.
 - Second course in Bolivar.
- December 8, 1978
P. GOE

 - Obtained written permission to train health promoters in five provinces - Chimborazo, Bolivar, Loja, Pastaza and Morona Santiago from the MOH, Dr. Miguel Almeida.
- January, 1979
P. GOE

 - Dr. Cesar Rivadeniera assigned as rural doctor to Columbe. Became involved in training promoters. Began working with Dr. Naula. Became responsible for about 20 promoters from that area.

- January 26, 1979 - Received first money from USAID.
- February, 1979
P, GOE, T - Curriculum development with the MOH in Chimborazo and Bolivar for training health promoters.
- Introduction of water filters and latrines.
- April 19, 1979
P, GOE - Met with FODERUMA and MOH for discussion of primary health care.
- Personnel from FODERUMA, MOH, OPS, travelled to Makuma to meet with AIPSE and HCJB personnel. Walked to the community of Achuentza in order to show officials in Quito the reality of providing services in the rural area.
- First contact with Rural Social Security System. Not interested in training health promoters.
- April 16-27, 1979 - First course held in Pastaza province. Curriculum developed by MOH nurse, Ines Yepez - 27 participants. Very difficult to teach because of 4 different languages - Shuar, Achuar, Quichua, and Spanish.
- May 19 - July 1979
GOE, T - MOH suspends all training activities by provincial doctors.
- Catholic University nursing students went to Chimborazo for clinical experience in community health. Helped to teach courses.
- June, 1979
T - Request to use Dr. Manuel Naula in the program.
- Family gardens introduced into the curriculum.
- June 21, 1979
P, GOE, C - First meeting of the newly formed national committee for Primary Health Care. This was a historical meeting since it represented a "pulling together" of organizations working in health. The purpose was to exchange ideas between government, community representatives, and PVO's. Fifteen health promoters came from five provinces. Six PVO's were present.
- June 25-29, 1979
T - Follow-up mini-course in Arajuno, Pastaza. Focused on government services.

- July, 1979
T
- Book on latrines written by Craig Shuck.
 - Three promoters from Chimborazo and one from Morona Santiago graduated from nursing aides course in Azogues.
 - Dental hygienist joined the team in Bolivar for six months.
- July 30 -
August 1, 1979
E
- Evaluation seminar conducted by Dr. Don Miller and Richard Crespo. HCJB and USAID personnel participated. Two men from MOH participated for a portion of the evaluation.
 - Second trip to Saraguro for investigation. No personnel available therefore the area of Loja was dropped.
- August 1979
- Dr. Manuel Naula hired for Chimborazo.
- August 6-9, 1979
E
- Dr. Don Miller, consultant from MAP, to help in evaluation and planning.
- September, 1979
T
- Three project vehicles arrived from United States.
 - Second promoter course in Pastaza, 17 participated.
- October, 1979
T
- Promoter course in Morona Santiago - census and vaccinations were emphasized.
- November 14-15, 1979
- Conference of all Quichuas in Ecuador. Among their requests is primary health care.
- December, 1979
T
- Began curriculum draft developed by MOH (see outline).
 - Book on water written by Craig Shuck.
- January, 1980
T, E
- Course on family gardens held in Colta. Established an experimental garden in Majipamba. 74 out of 80 families in Lirio began gardens. Taught by Quichua agronomist student. Promoters from the Columbe area were included in the course.
- February, 1980
GOE, T, S,
- Project personnel attended a conference by MOH on the status of primary health care in Ecuador.

- Dental Hygiene was added to the province of Morona Santiago and Bolivar with a volunteer dentist from North America. In Morona Santiago an experienced health promoter who was illiterate was taught the basic techniques of filling and pulling teeth. He later worked with a dentist from the MOH who gave him responsibility for the people in and around surrounding areas.

- Supervision of the volunteer promoters was done by MOH rural nursing aides in Morona Santiago.

- Promoter courses continued in all provinces.

- Mothers clubs were formed around the distribution of **Leche Avena**, a government milk supplement program.

- School health programs were introduced and small first aide boxes were installed.

- Radio health programs were developed by Dr. Naula.

March, 1980
GOE, T

- A stipend was established for promoters by MOH.

- Second course on family gardens in Colta with promoters from Columbe.

April 28 -
May 2, 1980
GOE, T

- Non-formal Education seminar was held in Colta for project personnel, selected health promoters and workers from all four provinces. This was the first time that some of the jungle Indians had traveled to the mountain area. Dr. Ted Ward from Michigan State University taught the seminar - four languages were used.

- Review course held in Pastaza province and Bolivar.

- Richard Crespo and Sara Risser involved in training program for nurses who would provide promoter training for MOH.

- School health programs done in Bolivar.

June, 1980
T, GOE

- MOH began their promoter courses in Esmeraldas, Imbabura and Chimborazo.

- Manuals for promoters available on a limited basis.
- June 30 -
- July 2, 1980
- E
- July, 1980
- Evaluation Seminar directed by Richard Crespo.
- 120 MOH health promoters graduated.
- August, 1980
- Involved in a study of primary health care by National Institute of Investigation. Study was done in Napo, Chimborazo and Esmeraldas.
- October, 1980
- First stipend was given to health promoters.
- January, 1981
- W, T
- MOH seminar for provincial health leaders on primary health care.
- Community education course for Pastaza and Morona Santiago by Richard Crespo. Attended by one person from Morona Santiago, one from MOH and three Huarani. Language difficulties limited the Huarani.
- February, 1981
- T
- Dr. Naula asked by MOH to help in program.
- Water course by Ron Moore in Shell and Colta on design of wells, use of well driller, potable water and source of water. Attended by MOH and other government agencies.
- March, 1981
- GOE
- Language barriers created problems in selecting potential participants for MOH promoter courses in Morona Santiago and Pastaza.
- April, 1981
- T, E
- Course on community participation in Colta - Richard Crespo.
- Mid-term impact evaluation by Dr. Patrick Marnane.
- June, 1981
- C
- Containers with plastic faucets for storage of boiled water were being used in Morona Santiago.
- July 20, 1981
- P
- First formal meeting of project personnel and MOH.

<p>September, 1981 T</p>	<ul style="list-style-type: none"> - First rural doctor to Makuma. - First community education course given by MOH for promoters.
<p>October 1, 1981 E</p>	<ul style="list-style-type: none"> - Information seminar presented by Project personnel for USAID, MAP, UNICEF, FODERUMA and MOH.
<p>October 22-23, 1981 E</p>	<ul style="list-style-type: none"> - Formal one year extension of OPG 518-0002. - Revision of promoter manuals by PVO's, MOH and others. This was the first group revision. Promoters also had an opportunity to give their input.
<p>December, 1981 T</p>	<ul style="list-style-type: none"> - Two promoters trained by the project from Bolivar and Morona Santiago and Pastaza participated in the rural aides course. - Wells prepared for pumps installed in Pastaza, Morona Santiago and Chimborazo.
<p>January, 1982</p>	<ul style="list-style-type: none"> - Water tech training began in Chimborazo.
<p>April, 1982 GOE, T</p>	<ul style="list-style-type: none"> - Seminar for PVO's given by the MOH on their programs. As a result, meetings were held with CONADE and Dr. Julio Palacios. - MOH promoter course for Shuar taught in Shuar by two nursing aides and MOH nurse. Twelve volunteer promoters from Morona Santiago and five from Pastaza were able to participate. - First MOH promoter course held in Bolivar.
<p>July, 1982 E</p>	<ul style="list-style-type: none"> - End of project evaluation with Dr. Don Miller and Richard Crespo.
<p>August, 1982</p>	<ul style="list-style-type: none"> - Water tech training began in Morona Santiago.
<p>September, 1982</p>	<ul style="list-style-type: none"> - Project extended until December 31, 1982.
<p>November, 1982 E</p>	<ul style="list-style-type: none"> - Evaluation impact by Dr. Patrick Marnane. - Water filter demonstration course in Colta and and Yaapi by Fernando Mazariegos.
<p>December 31, 1982</p>	<p>Termination of funding by USAID for OPG 518-0002.</p>

IV PROJECT IMPACT

When considering the accomplishments of the Rural Health Care project there are several introductory comments that should be elaborated on regarding the cooperation and input received from other organizations and government agencies.

Much emphasis has been given to vaccination programs in each of the four provincial areas. Because of the health education provided by the health promoters in the communities there was an acceptance of the government vaccination program. Without the cooperation and coordination of the Ministry of Health helping with vaccination campaigns in Bolivar, Morona Santiago and Pastaza, it would have been impossible to accomplish the given amount of coverage in these areas. The province of Chimborazo moved a bit slower in the area of vaccinations due to the initial difficulties encountered in coordination with MOH and the lack of available vaccine. Also, those in charge of the MOH program of vaccination in Chimborazo had requested that the program be carried out through existing government subcenters rather than providing vaccines directly to the communities through project personnel or MOH personnel. Many children were not able to be vaccinated because the vaccines were often not available through the local government subcenters. Steps have been taken to resolve this problem with the assignment of a rural doctor to the area and the increase of vaccines to this subcenter.

Sanitation and pure water have also received much emphasis throughout the history of the project. The government water and sanitation agency (IEOS) has cooperated with excellent help in Bolivar through the provision of latrine tops to communities and through engineering consultations in both sanitation and water systems. Pastaza, also through the office of IEOS, has provided hand pumps for wells. IEOS in the province of Chimborazo has cooperated with the project through assistance in the hand pump and water systems program. The U.S. Peace Corp has provided valuable technical help in the water technician training program in the province of Chimborazo and Morona Santiago.

MAP, International has been a tremendous help with their consultants and their excellent help provided in the area of non-formal education that was so necessary in the on-going training program of the health promoters.

PROJECT IMPACT SUMMARY

Of the total population of 54,000 served through the project in the province

of Bolivar, Chimborazo, Morona Santiago and Pastaza there are 9,820 families living in 128 community areas. For the purpose of the late 1982 survey 45 communities or 36% of the total communities representing 1,315 families were contacted. During 1978 and 1979 the project trained 142 health promoters of which 83 were involved in 1980 through 1982 in continuing education. Eighteen additional promoters have been trained by the MOH as rural aides and are working in supervisory and community health roles. Project personnel are currently responsible for direct supervision of 57 health promoters working in communities in project areas.

Of the ten water technicians trained eight are presently active in well site development, hand pump installation and general hand pump maintenance.

Preventive health emphasis has seen 924 or 68% of the under 5 years of age population in 45 communities vaccinated with DPT, BCG, polio and measles vaccines. The project referral system has referred over 106 patients and has noted a significant reduction in parasitic infections in all areas. The project areas in Bolivar and Chimborazo have noted a 51% increase in families with their animals separated from the living area. There has been no change noted in Morona Santiago and Pastaza. A 42% increase in family gardens has taken place in the province areas of Chimborazo and Pastaza.

In environmental health the statistics have increased in all areas with a total of 204 latrines and 54 hand pumps. In addition to these categories 61% of the families in project areas are boiling water or using other pure water sources. The percentage of families washing their hands before meals is 25%. (See the following chart of the project impact.)

PROJECT IMPACT SUMMARY

	Bolivar	Chimborazo	Morona Santiago	Pastaza	Total
Population served					
# people	5,500	43,000	4,000	1,500	54,000
# families	1,000	7,820	730	270	9,820
# communities	21	55	35	15	126
1982 survey (a) (b)					
# people	1,550	1,970	2,640	1,200	7,360
# families	270	350	480	215	1,315
# under 5 yr.	93	162	900		
# communities	7	5	24	9	45
Training					
# promoters	13	63	32 (c)	34	142
# promoters in continuing ed.	6	42	29	6	83
# promoters supervised					
direct	11	6	29	11	57
indirect	—	—	6	—	6
frequency yearly	6	12	5	3	
# water techs	—	3	5	—	8
# community health meetings/month	2	4	2	—	
Alfalit (d)					
graduates	9	—	—	—	9
enrolled	50	—	—	—	50

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	Bolivar	Chimborazo	Morona Santiago	Pastaza	Total
Preventive					
# vaccinated under age 5	60 (65%)	64 (40%)	800 (89%)	(80%)	924 (68%)
referral system	35 (83%)	50 (47%) ^e	21 (79%)	Increased	106+
reduction of parasitic infection	37	50	(f)	(g)	
# families with animals apart from living area	132 (49%)	186 (53%)	no change	no change	318 (24%)
# gardens	-	70 (20%)	480 (199%)	165 (77%)	715 (42%)
families communities	-	3	-	-	3
Environmental					
# latrines	57	70	68	9	204
# hand pumps	-	39	8 (h)	7	54
# families boiling water	260 (59%)	130 (37%)	150 (31%)	20 (9%)	560 (42%)
# families using other pure water	-	100 (28%)	150 (31%)	-	250 (19%)
# families washing hands	188 (69%)	70 (20%)	216 (45%)	45 (29%)	519 (38%)

Impact by province explained on the following pages.

a - All statistics given refer to the 1982 survey.

b - The 1977 baseline figures were "very few" or "none" in all areas mentioned with the exception of Morona Santiago in the category of # promoters and hand pumps.

c - Baseline figures for 1977 show 37 promoters existed that had received rudimentary training.

d - Alfalit, a literacy program to teach adults up to a primary level.

e - All children under five years of age were required to received BCG vaccine.

f - Twenty-two promoters (75%) reported a significant reduction in parasitic infections in the communities surveyed.

g - Promoters reported a significant reduction in parasitic infections in the communities surveyed.

h - Baseline figures show the existence of six hand pumps in 1977.

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BOLIVAR

Baseline Data -- Before the project began in 1978 there was nothing being done in the communities in which we now work in the areas of health teaching and health improvement. Ten houses were surveyed in each of the seven communities. The houses and communities were chosen at random by pulling number slips out of a hat. All of the communities had less than one hundred houses; therefore, project staff felt that ten houses would be an appropriate sample size.

Training.

Background - No health promoters trained to work in the communities.

- During the four years of the project thirteen health promoters have been trained. Five of the six that are still active in the project have completed training offered by the government in addition to the training offered by the project. One has completed his training as a rural health aide.

Background - No promoters available for communities to utilize.

- During the 1981-1982 year 105 families have used promoter services at least once. Services provided by the health promoters included: health talks, referral service, curative medication, help in latrine construction, help with vaccination programs, etc. The project has functioned in 21 communities with an estimated total population of 5,500 people.

Background - Very little emphasis was put on health teaching in the communities.

- The health promoters have been trained in a method that involved the learners in dialogue. "Health talks" are held approximately two times every month in each community. It is estimated that 50% of the community participates in any given "talk". Indications are that people are becoming increasingly aware of the cause/effect relationship involved in their personal health and in disease transmission.

Background - Very little emphasis on the program of Alfalit in the project areas.

- Since the beginning of the program in 1979 (fall) there have been nine graduates. Six more will graduate in April 1983. Of the 50 registered in the program 25 attended the last course in January, 1983. Project staff was responsible for teaching science (human body, animals and social) to the second and third levels the first year. The following years all classes (math, language, science, Bible and dictation) were taught on the third level (fifth & sixth grade).

Preventive

Background - Suspicion and resistance regarding vaccinations.

- Promoters have taught about vaccinations and communities have responded. There is a growing acceptance of the government vaccination program. 65% of the 93 children in project communities have completed the entire three stage government program. This program included vaccinations for: DPT, polio, measles and BCG.

Background - People didn't go to referral subcenters because they were not treated.

- Patients with disorders beyond the capacity of the promoters to treat have received attention at the nearest subcenters or in Guaranda. When the promoter refers a patient to the subcenter and goes with him the patient will receive the needed care. Promoter records show that 35 of the 42 people referred received the care needed.

Background - Before the project began people would go to any pharmacy and buy indiscriminately something for their parasites or the pain in their abdomen.

- Due to preventive health care the curative use of medicines is declining. There has been a decrease of 37% in the project communities of the need for use of parasitic medication due to the emphasis on improved health. Trained promoters are now providing a more appropriate use of available necessary medicines.

Background - Animals have had free access to living areas and their droppings have not been removed.

- Some families are now restricting animals from the living area and are cleaning up droppings. Surveys indicated 49% of the homes are free of garbage and animals wandering throughout.

Environmental

Background - In 1977 there were no latrines in use in project communities.

- People now believe that using latrines improves their health. The relationship between disease reduction and latrine utilization is very apparent as you talk with people. There are (November 1982) 57 latrines in seven communities. Of these 57, 30 exist in one community where there are 28 homes and a school. Personal interviews noted that 90% of those having latrines utilize them.

Background - Very little interest and understanding in the need to drink potable water.

- As a result of promoter education people in the communities are much more aware of the need to drink pure water. There is a growing desire for

potable water systems. Even now, survey data indicates that 60% of the people in project communities are drinking water treated either by boiling or adding chlorine. Government agencies working with interest in water are also helping to get water systems into communities. As a whole, people in the project area believe that drinking potable water improves their health.

Background - Very little interest in washing hands before meals.

- Documentation in the project area indicates that 70% of the people surveyed are washing their hands more frequently now. Project personnel visiting homes in the communities are now offered water to wash their hands before eating and have noticed members of the family doing the same. Also, when the community gathers for meetings, project personnel have observed people washing their hands before meals. This was not common during the first years of the project.

CHIMBORAZO

Training

Background - There were no health promoters working in the communities nor was there evidence of health education on the community level. A total of 63 health promoters were trained between 1978-1980. The MOH retrained 29 in the MOH program in 1980 and also trained an additional 10 as auxiliary workers. In 1981 and 1982 a program of continuing education was carried out for the promoters to help them as they taught their communities. Included in this program were the 29 MOH promoters and 13 volunteer promoters for a total of 42 in continuing education. This has developed into bi-weekly classes that include the themes: vaccinations, organizing an educational talk, home visits, medicines, diarrhea, family gardens, nutrition, systems of the body, parasites and their transmission, and government statistics.

Background - There were no health promoters working in communities.

- Health promoters and rural aides are actively serving in 31 communities. Services rendered by the health promoters that benefit the community are: assisting during **LECHE AVENA**, involvement with immunization programs, helping with school dental and health programs, providing educational health talks, initiating projects of special interest in the communities, visiting homes in the communities, consulting patients in an office at their work places which has been provided by the community, and consulting with patients in their local community.

Background - There was only occasional health education done in the schools by Spanish teachers. Some teaching at church gatherings was done by missionaries. One missionary reports that her first health talk was on clean hands. This was given in Spanish and translated by a Quichua girl who added, "This is what the missionary does, but we don't do this". Perhaps that

statement underlines the non-effectiveness of teaching through translation.

- Various tools are being utilized in health education. Repetition seems to be the key factor. Repetition not only in the method but also in the material and personnel. For example: The need to drink pure water was promoted on repeated occasions in the schools, at work gatherings, in the homes during family visits, over the radio, by films and during casual chats. The basic tools used for health education include:

Educational talks given by the health promoter in his community — in the schools for children, at night schools with adults, at work gatherings where the entire community gathers, and at church gatherings.

Demonstration of how to use a toothbrush, plant a garden, build a latrine, dig a well, etc.

Dialogue based on the how to's, why for's, and interaction of the promoters with the community. Feedback on the lectures, questions, answers and comments.

Flannelgraph is used in teaching mother's classes, with school children, and at small group gatherings in the homes and at churches.

Home visits have been an effective tool that reaches approximately 80% of the Quichua population in the Chimborazo province. From these visits it appears that every Quichua family has a radio. For the past three years the Colta Radio Station has a daily thirty minute health program reaching into these homes.

Films and filmstrips have served as an excellent tool to reinforce what the promoter has taught. Films have been the best method to make the teaching become more real to the people. Health promoters and rural aides have utilized films in forty communities to over 3,000 people. The subjects include: pure water, latrines, T.B., transmission of diseases, parasites personal hygiene, care and feeding of infants and children.

Booklets simply written and illustrated have proven to be very useful tools as they are readily available for quick reference.

Preventive

Background - The only vaccination that the children received was BCG which was a requirement in order to receive a birth certificate.

- In the five communities surveyed there are 269 children under the age of five. The percentage of those receiving the first doses of OPV and DPT is 60; of second doses is 35; of third doses is 20.

Background - Because of a language barrier, lack of understanding, lack of exposure, lack of confidence and ignorance the Quichua people were afraid of going to the hospital.

- A system was set up whereby when the promoter referred a patient to the hospital, the patient was to bring the signed referral paper back to the promoter from the doctor. A survey indicated that out of 106 patients referred to the doctor in a six month period, 46% of them returned to the promoter with the papers signed. Others verified the fact that they did go to the doctor but they lost the referral paper or the doctor failed to return the paper to them.

Background - Unhealthy home environment with an unkept appearance and animals given the freedom to roam in and out at random.

- Promoters have taught the people in their villages to separate the animals and prevent them from entering the house. Daily sweeping of the house and patio is encouraged, as well as burning or burying of the trash. Instruction has been given as to the value of raising the beds off the floor. Promoters relate the difference seen in their communities regarding the cleanliness of the homes and patios. Some families have built corrals or cages for their animals. The 1982 survey relates that 53% of the houses in the five communities surveyed are separating the animals from living/sleeping areas.

Background - The Quichua diet consisted of potatoes, barley, onions, and haba (large lima) beans.

- Health promoters have initiated three types of gardens: community, school and individual (family). As of September 1982 data was received through a survey demonstrating that 50% of the communities have community gardens while 20% of the communities have family gardens. As a result of promoter teaching in the communities there is an exposure to the basics of nutrition as well as an understanding of cultivation and preparation of vegetables such as cauliflour, cabbage, broccoli, raddish, lettuce, spinach, carrots and beets.

Environmental

Background - There were no latrines utilized before the project began. People were not aware that diseases could spread through improper disposal of fecal material.

- There are about 70 latrines presently in use in the five surveyed communities. The sanitation education has passed to many communities where there is no health promoter. Many of these communities have come asking project personnel for help. Small industries were begun to make concrete latrine tops. A health promoter and two men work part-time making the tops to sell to interested individuals or communities. Over 1000 tops have been made.

Background - No previous training had been available in latrine construction, water systems or savings/loan. Therefore, the hand pumps that existed received no maintenance and were no longer servicable when malfunctioned.

- Three Quichua men are now working as water technicians. Training has included well construction, hand pump installation, and repair/maintenance of water systems. They have been responsible for working with the communities that now have existing potable water systems.

Several Quichua men have been trained to make latrine top covers. This resulted in the organization of six small industries.

Through community education a need was demonstrated to begin a Savings and Loan program. MAP, International worked with the existing Indian Association in the training and development of this organization.

Background - Fleas and lice are a constant nuisance to the Quichuas in the project areas. Bathing and washing of their clothes is reserved for special occasions.

- Promoter teaching and education through radio programming is bringing about a change in personal hygiene. Teachers in the schools relate that the children's hands and faces are much cleaner now. At conferences and work gatherings many people wash their hand before eating. We are informed that some families are bathing and washing their clothes twice a week.

Background - Very few hand pumps were in existence and most of them were in need of repair. Very few people boiled their drinking water. Most obtained water from rivers, streams or wherever.

- Promoters and communities have been taught the relationship between contaminated water and illness; through such non-formal means as the human chain and disease travelling chain, etc.

Boiling water has been stressed and is presently used in four of the five communities. A recent survey revealed that 38% of the families boil water for drinking. In the fifth community, 76% of the families use chlorine tablets in their drinking water.

A variety of methods are being used for potable water in the communities in the Colta area. In December 1982 thirty-nine hand pumps were in operation in thirty communities. These provide potable water for approximately 800 families. Two other communities have piped water. One is using a large holding tank that protects and collects water from a pump. Eighteen communities have a piped-in water project still in the beginning stage.

MORONA SANTIAGO

Background - Some 80% of the patients treated by promoters went to the witchdoctor. The health promoter was tolerated, but not respected.

- The health promoter is an integral part of the community being recognized along with the village officers and schoolteacher. His services are sought by his own community and surrounding areas as well.

Background - Before the project began there were 37 promoters in some twelve stages of rudimentary training. Supervision was very limited. During the first year of the project the advanced promoters (those with five or more years training) were given a review course using two textbooks as a basis for the course. Then the less advanced were also given the same course. The following years new groups were trained until late 1979 when the MOH asked that we train no new promoters.

- At least 35 health workers (29 promoters and six rural aides) with at least three years of experience and training are serving some 29 communities with a population of some 3,000 Shuar.

Background - Promoters used pure lecture method in their efforts to teach adults. By the end of the lecture, during which the promoter encouraged practices that he did not participate in, the promoter's wife was the sole audience.

- Health education has been promoted through basic non-formal education methods of listening and eliciting dialogue along with the presentation of new ideas (utilizing methods such as: stories, drama, flannel figures, flip charts, example, filmstrips and films). Random community sampling indicates an average of two community meetings each month with 5-6 home visits during the same period.

Background - Supervision was done by a missionary nurse at an average of two visits per year.

- Supervision of the promoters is done by Shuar rural aides and a project nurse. The rural aides spend five days per month in supervision visiting all communities on a bi-monthly basis.

Background - Each Shuar community had a president and officers. More recently the president was recognized as the community leader even though he may have been young and not one of the traditional elder men. Parent/teacher organizations have functioned as long as there has been schools.

- Local "health committees" have been organized in many communities usually made up of the village president and officers and the health promoter. There is an active Health Commission representing the health needs of the Shuar Association. It is responsible for policy making and receiving referrals on matters not settled on the local "health committee" level.

Preventive

Background - The Shuar people were very susceptible to viral disease. Measles epidemics had taken many lives. Whooping cough was also prevalent. However, people were not afraid of injections as they had seen miraculous results from penicillin injections.

- Six communities of the twenty-nine served in Morona Santiago were select-

ed at random and interviewed by the area supervisors and health promoters as to the numbers of children who had been vaccinated. The finding was that 90% of the children under five had received vaccinations.

Background - Virtually no referral system existed.

- The first step in the referral chain was the visiting supervisor who most often would be one of the four rural aides who periodically visit each village at three to four month intervals. Periodically, a nurse or physician would be involved in the supervision trips. During the course of the project a rural physician was placed at the rural clinic in Makuma. About one-third of the communities are close enough (within five hours walking distance) to use that service. Hospital Vozandes-Shell, the MOH regional hospital in Macas or the Social Security hospital in Puyo serve as three alternatives in the next step of the chain. Since the air carrier that does most of the flying to project villages is based in Shell, the majority of the patients are referred to Hospital Vozandes-Shell. Finally, tertiary care hospitals in Quito are available for those cases that fall outside of the scope of the general surgeons and general practitioners that work in the regional and HCJB hospitals. Of the patients reported to have been referred by health promoters in 1981, 86% of them complied with the suggestion to seek further care. An average of three patients per community were referred in 1981. In a study of the last 30 patients from the project area referred to the hospital in Shell (late 1982), it was found that 70% of the people who came from project communities came with referral information. Patients who arrived from non-project communities (6) in no instances arrived with referral information.

Background - Quantifying disease reduction was perhaps the most difficult of the parameters chosen. This resulted partly because there was little in the way of baseline data available. Parasitic infections and tuberculosis were chosen as pre-project parameters to evaluate, but the study only identified parasitic infections in a qualitative manner.

- Fully 70% of the promoters reported reduction of parasitic problems in their communities. Impressions by personnel at Hospital Vozandes-Shell support those of the health promoters. Parasitic disease, as the sole reason for hospitalization, has decreased dramatically. Parasites are still found on routine exam, but it is rarely the principal reason for referral. Another view of disease reduction is from the therapeutic standpoint. How effective are the promoters in their curative role? In a review of 511 promoter/patient encounters it was found that correct or adequate treatment of the problem was administered in 86% of the cases.

Environmental

Background - In 1978 there were no latrines in any of the communities.

- In 1980 sanitation/latrine programs began. By November 1982 at least 75% of the 29 communities had started a program. Village results demonstrate a

wide variance with as few as 6% of the villagers having latrines in one village and on up to 100% of the villagers in another. A random check shows that 27% of the villagers in the project area have their own latrines and use them. Each family that built their own latrine also paid for the materials. It didn't "pay" a family to build a latrine and not put it to use.

Background - Water for drinking and cooking was obtained from rivers and springs.

- If you haven't had the joy of tasting hickory smoked water it will be a little difficult to appreciate just what it takes to introduce boiling as a means of obtaining pure water in an area of wood burning fires. Surveys for this report showed the incidence of drinking clean water (which included springs and rainwater) to be as high as 70%. Given the problems inherent in establishing consistency of clean water use, this figure probably reflects "occasional" or "partial" usage of clean water. Granted the inflated nature of this figure it is very significant to see that the tendency is toward increasing acceptance of boiled water. Also, the notion that water can bear disease is now widespread among the Shuar.

Both a water filter program and a hand pump program have begun in the project area. A water technician training program for installation of hand pumps and maintenance was started in August 1982.

Background - Handwashing before eating was not practiced on any regular basis.

- Health promoters, through community education, are helping their communities recognize the link between dirty hands and disease. Handwashing as a basic part of personal hygiene has been taught since the beginning of the project with little success until the idea of a "place" established specifically for handwashing was realized. Promoters are encouraging every household to establish a handwashing station comprised of a water basin, soap and towel. On the average, nearly one half of the households (472 surveyed) reported regular handwashing as a part of their daily routine.

PASTAZA

Background - Before the project began there was no ongoing health care available to the vast majority of the province which is accessible only by air. Preventable diseases took many lives and waterborne diseases were spread through the vast river systems which served as the only source of water. Infant mortality was estimated to be as high as 50%. Only a few severe cases came to the government hospital in Puyo or the mission hospital in Shell.

Training

The project trained 34 health promoters. An additional 5 trained by the MOH are serving in our project area and are being supervised by our project

staff. There are presently 6 active in 11 communities. Total population of these communities is about 1,500.

Preventive

The program of vaccinations has met with success. The percentage of children vaccinated has increased from 0 in 1977 to 90% for DPT vaccine and 80% for measles in 1982.

It has generally been reported by people living in the project area that they experience less illness now than in 1977. Parasitic infections have been noted to be considerably lower. The most frequent comment from the communities served related to the reduction in infant mortality.

Environmental

Beginning with a baseline of 0 the health promoters introduced the rationale and need for latrines in the communities. By the end of 1982 it was estimated that 20% of the people living in project communities had access to and utilized latrines. Of the nine schools that exist in the communities served, the majority have latrines which are being used by the schoolchildren.

The percentage of people using pure water, primarily obtained by boiling river water, ranges from a few in several of the communities to 30% in two communities. Since July 1981 the project has initiated and supervised the installation of hand pumps into interested areas. At the end of 1982 seven pumps provided by the local MOH office had been installed.

GENERAL ACCOMPLISHMENTS

Background - Inadequate materials available for teaching health promoters most of whom experienced only a grade school education.

- Curriculum materials were developed resulting from the assessment of needs, evaluation of materials being taught in Morona Santiago and requests from the communities. Craig Shuck, one of the project personnel compiled two booklets for teaching water and latrines, **El Agua Potable** and **Letrinas**. These were written in simple Spanish utilizing simple diagrams explaining the written words. Manuals written in Shuar were also used for teaching courses in Morona Santiago.

V ANALYSIS

The ultimate question in any health care development project concerns behavioral changes and degree of advancement in the process of personal and community maturation or development. On an individual level, clear behavioral changes were observed in all of the areas which indicates progress toward enabling people to help themselves. On a community level, progress has been slower yet still very evident. This progress was particularly evident in the fourth year of the project as more and more communities initiated active health committees, presented solicitations for hand pumps, and began seeking out project personnel for greater assistance in other health related fields. In light of these types of changes, the project did provide advancement in health care for the indigenous populations served.

The advancement in health care and those elaborated on in the IMPACT section were actually end products of the original USAID grant and the in-kind contributions by the various participating organizations. The grant expenditures amounted to \$244,001. The in-kind contributions were estimated at \$668,652 (see APPENDIX C and D). Therefore the total cost to service part of four provinces or 54,000 people for 51 months was \$912,653.

The USAID grant expenditures included two years of training 142 health promoters at an average total cost of \$103 per promoter. The grant expenditures also included about two years where the principal activity was supervision and continuing education. The estimated cost to supervise one promoter for one year was \$75. It should be recalled that these would only be representative of a pilot project. All costs would be expected to decline as the project gained more experience and expertise. These figures only represent training, travel, supervision, materials, etc. Personnel costs are not included and would contribute significantly to the average cost per promoter trained or supervised. Personnel costs were excluded because such highly trained personnel as were used in this project would not be cost effective. Doctors and nurses with advanced degrees would only be preferable if monetary rewards were not a major motivating factor. It would be best to hire promoter trainers with fewer specialized skills and a strong interest in working in rural areas. Probably the best suited would be promising local rural aides or nurses given educational training.

Besides training and supervision of health promoters, the grant primarily went toward environmental sanitation. This was in the form of pumps, latrines, materials on sanitation and training of water technicians. The activities and accomplishments in this are outlined in earlier sections. Cost/benefit ratios can also be determined in this area; however, personnel

costs are excluded. Most of the coordination of this area was done by one staff member about one-half time and a Peace Corp volunteer who specialized in water systems. Pumps were supplied by the grant for S/. 8,500 or \$258 at 33 exchange. The labor and materials were supplied by the community for approximately S/. 8,000 and S/. 3,500 respectively depending on the well site. In dollars, the community supplied just over 50% of the cost to develop a well site area or \$329 at 35 exchange. Therefore, the total cost/pump installed was \$587. Thirty-nine pumps were installed in 30 community areas. The total population of these communities is 5,000. Therefore, the cost per beneficiary was \$4.58 per person.

The pumps in Chimborazo were installed and maintained by three water technicians trained by the project. This pilot project demonstrated the feasibility of training Ecuadorians in technical areas to maintain capital investments. Equipment costs for tools were about \$400 per technician. Training costs were around \$500 per water tech. The training costs were extremely high because of the high attrition rate (two of the five originally trained dropped out), the low number trained, and the beginning phase of the learning curve. The cost would be expected to approach, but never equal, the promoter training cost because of the nature of the water technician training. Well location, pump installation and maintenance requires certain technical skills. All of the technical areas need to be included in the initial training courses. Therefore more initial training is needed with very inexpensive supervision and little continuing education. It was still profitable for the project to follow a repetitive and simple scheme of training courses to teach all of the skills needed to be a water technician.

The other areas of environmental health were primarily directed at the provincial level. These areas were in response to the local need and ingenuity of the people and staff member. An example would be in Chimborazo. The need for latrine tops initiated a small manufacturing setup to produce tops. Another example would be in Morona Santiago. There they either passed around the cement form for the latrine top to the villages who manufactured them on their own, or they cut cross-sections out of large trees to utilize as a top. Handwashing stations were also a result of provincial level direction. This form of ground-up planning with staff input contributed greatly to the overall acceptance of the project.

MAJOR CONTRIBUTIONS

A. Improved Health

"Improved health" is always a difficult phrase to prove even with the most sophisticated statistical analysis. The conclusion that health was improved comes from three indicators: data acquired in the project areas, observational data by project staff, and personal testimony from individuals

served by the project.

The 1982 survey presented fully in Section IV PROJECT IMPACT was the basis for the data acquired by the project. The survey indicated more than 60% of the under-five population had been vaccinated and in two of the project areas 80-90% had been vaccinated. Some form of potable water is now being used in more than 60% of the families. Along with the rise of potable water there has been a great increase in the number of latrines which are being utilized in the areas. Over 200 latrines have been built since the project began in 1978. Parasitic infections were never statistically documented throughout the project; however, the vast majority of the promoters reported a definite reduction. Three of the four project areas met or surpassed the goal to train health promoters in the 121 communities targeted at the outset. Of the originally trained promoters, 71% of them are continuing on as health workers after the 1980 transition to an MOH promoter program. This type of data indicates the project has had not only a positive impact on the health system, but that the health of the people is improving.

Observational data from individuals who have continued contact with an area can often provide a reliable source of data. An example might be the types of cases observed in Hospital Vozandes-Shell. Doctors at the hospital report there are currently fewer seriously ill patients brought in from the jungle. This type of change could be attributed to a change in the referral system or a change in the status of the hospital itself. The principal air ambulance services have consistently been based in Shell; therefore, most of the seriously ill patients come to the mission hospital. Except for the major hospitals in Macas, Puyo and Shell it is very difficult to travel beyond the edge of the jungle in an emergency. The relative status of the major hospitals has not changed significantly in the past four years. These facts, along with an increase in the acceptance of western medicine, would indicate that a true reduction in the incidence of serious illnesses in the jungle area has taken place.

Project personnel have observed behavioral changes that would indicate health practices are being internalized. When early attempts to obtain potable water while on community visits were met with a scurry of activity and steaming hot water, one could easily conclude boiling water for drinking was not a daily practice. However, current visits to a variety of communities are often met with room temperature water from a special container designated for water.

Similar observations have also occurred in the area of handwashing before eating. Community workdays excluded handwashing and included ingestion of a great deal of dirt. Again assuming all behavioral changes are not just for "show", a majority of people are currently observed rinsing off their hands before eating at the community workdays. These and other behavioral changes indicate improved primary and preventive health care practices are being im-

plemented at the community level.

Often the bottom line for improved health comes from individuals in the local community. Some of the following excerpts from interviews with health promoters would indicate they believe their health has improved.

"We no longer bury as many of our babies."

"Before the project came along my people died of many diseases without knowing the reason for them. Now they know that many diseases are caused by bacteria. Understanding how disease is spread, they now know that some can be prevented."

"Our people are washing their hands and taking baths because they understand that washing can kill germs and improve their health."

"Before we learned about how disease spreads my wife was sick almost every month. Now since we boil our water she has only been sick once this year."

Project personnel believe the most significant reason for this improvement in health was the work of the individual health promoter. The promoter formed the critical final link in the promotion of health and the critical first step in assessing health care. The trust developed by the promoters over time with their communities provided confidence and utilization of their skills. This factor of acquiring the trust of the people was essential in order to realize any change in health and bears the majority of the credit for the improvements seen.

B. Established a Model for the Ministry of Health

A second major contribution of the project was the establishment of a primary health care model that was integrated into the national health care system. The project in its first years served as a testing ground for work with health promoters. The ultimate MOH system drew upon the project's experience in community organization, curriculum development and teaching methodology. Further input was provided through attendance at MOH planning and strategy meetings. During the last two years the project contributed to the expansion the MOH program by assisting in the training of rural aides and serving as supervisors for promoters and rural aides.

Integration into a government system did provide certain limitations on the project. These restrictions were not viewed as setbacks by the project because integration into the MOH system was part of the original goals of the project. Therefore, the long range objectives were fulfilled at the cost of greater freedom to expand the short range influence of the project. All the PVO's in Ecuador working with health promoters in 1979 were not integrated

into the national health care system as was this project. This logically leads one to question, what were the factors that contributed toward integration?

Factors which led toward integration would include cooperation with the government health care system and MOH officials. The project was able to utilize the positive relationship established by the two HCJB hospitals as an initial point of reference. The project then actively solicited government input while forming the original project plans. This inter-cooperative spirit was carried on throughout the project through meetings and information sharing. The project always kept in perspective that its' own existence was at the desire of the MOH. Therefore, the role taken was one of assisting and serving the government in order to provide health care for these underserved populations.

A second factor which led toward a smoother government integration was a flexibility on the part of the project and its' staff. There was no backlash by project personnel at being assigned the role of supervisor of certain promoters. Personal desires to reach the original goal of training and establishing health promoters in the 121 chosen communities were replaced by government goals. Teaching and training methods were readily shared with the MOH, and the new MOH training requirements for promoters were willingly adopted. A mid-course adjustment as was necessary during this project is never easy; however, the continuation of health care services for these underserved populations depended on the flexibility of the project and its' staff.

STRENGTHS

The process of development was enhanced by a variety of factors. As stated, the trust which developed between community and promoter helped toward the development of improved health. The factors of flexibility and intercooperation with the government helped institutionalize the health promoters. All of these would be classified as strengths which should not be overlooked.

The project was initiated through organizational channels that were well known and respected. Each organization had worked in Ecuador for many years and had gained the trust of the people in their area. This originally helped to open doors in areas which were typically leary of outside intervention. This name recognition worked in favor of the project throughout its duration. Often people who had not heard of the local organization had heard of HCJB through national radio broadcasts. Therefore, the infrastructures used to initiate the project helped complement each other and contributed to the process of development.

Since the initial opening was provided by the respected infrastructures, the project sought to capitalize on that advantage. The project was fortunate

in drawing upon existing HCJB personnel and recruiting others who were capable in furthering the positive relationship with the people. These people were skilled doctors or nurses who lived in or near the project areas in isolated or semi-isolated areas. The teacher/student relationship did not eliminate an empathic attitude and caring spirit which built greater trust and acceptance over time. The actual role assumed by the project personnel was one of a respected co-laborer, interested in working through the process of development with the people. The low turnover in personnel and long hours worked, demonstrated the high commitment of all involved. Undoubtedly the personnel's strengths in interpersonal relationships and personal commitment were able to counterbalance the lack of experience in development.

The strength found in the project personnel was also demonstrated in the manner which they were able to adjust to unforeseen circumstances. The flexibility toward the new promoter system instigated by the government is only one example. Far more examples could be drawn from the experiences with training health promoters and working with communities. Flexibility became one of the key words as they had to experiment with training and community organization in these new cultures.

After a few training courses it became apparent that knowledge was speeding far ahead of application. The promoters were trying to teach things they were not practicing. This forced a reduction in the amount of material presented. Courses included much more repetition during the course and closer supervision between each course. The non-formal education seminars were presented to the promoters in response to poor receptivity by the communities toward lecture style teaching. Different forms of health committees were tried in various areas due to poor participation and lack of role definition for the committee. Some committees were chosen on an elective basis and others were handpicked out of the community leadership structure. In some areas health committees were non-operative and the project had to continue to work with promoters without community input. More of the reasons for these difficulties with community health committees will be presented in the following section on weaknesses. The positive aspect of this problem was the demonstration of flexibility by the staff to work around these areas and other constraints external to the project. Another example would be how weeks of planning sometimes were totally lost in a few hours of hard rain that made travel impossible. Flexibility in all areas proved to be an invaluable asset for the project.

The strength of project personnel and their flexibility helped to move the process of development along. This fact alone would never have accomplished the final outcome had not the complementing strength been present. This complementary strength was the pulling or seeking out of development by the communities. Had the communities not been seeking and soliciting for such development work, little if anything would have been accomplished.

Aspects that reflect this community solicitation would be the original request for help by the indigenous association of Bolivar. Had it not been for this request the project might not have begun or might have taken a totally different scope. Certainly the petitions for curative care created a different approach to the development process. Where the original approach de-emphasized curative care in favor of prevention; it was determined that prevention would not be accepted unless some immediate curative needs were resolved. Currently there are more solicitations by communities for hand pumps than there are pumps available to install. In each case it was the community that created the driving force to move the project into certain areas.

Community involvement was also apparent in responses to development activities. The project experienced a growing interest in educational talks by promoters. Willingness to organize and change behavior increased as well, in spite of the fact that the changes often resulted in greater costs in time and finances. An example is boiling water. In the highlands where wood is scarce and time consuming to gather, people still adopted the habit of boiling drinking water. After one evening film on vaccinations, people lined up for the shots which unfortunately were not available there. The concept of water filters was met with great enthusiasm. After the course people were determining ways they could manufacture and distribute such filters in their local area.

These positive responses and constant petitioning by the communities for further development created a favorable light to operate. The project utilized this strength in guiding its course along the process of development. Aware that if immediate wants in the context of primary health care were satisfied, the entire project would reap the benefits of trust and acceptance.

One of the fastest ways for a missionary based organization to eliminate trust and acceptance would be to limit the benefits of the project to only religious adherents of their philosophy. This potential weak area became one of the project's strengths by establishing the precedent that communities were the focus of the program and not individuals. Therefore, all the members of the community, irregardless of religious ideology, benefitted from the promoters' skills and applied technology. Due to this strength, integration into the government program was much easier. This broad approach to community health provided many bridges that added to the strength of the project.

The following is a list of the strengths of the project presented above. The order in no way implies a prioritizing of their significance. The strengths were primarily chosen based on the impact they had on the development process, some of which could be replicated quite easily. It is

believed those that could be reproduced would have a similar effect of enhancing the development process in other projects.

- a. Trust established by health promoters
- b. Strong inter-cooperation with MOH
- c. Established and respected infrastructure
- d. Flexibility of the project and personnel
- e. Committed personnel
- f. Following community requests
- g. Broadly based community orientation

MAJOR CONSTRAINTS

The project experienced constraints beyond its control which limited some of the accomplishments. In the final analysis, each constraint was essential to encounter if the project was going to create the types of changes in the areas outlined in the original proposal.

Geography is one example. In spite of the problems due to working in isolated areas, it is precisely those who are most isolated that needed the access to health care which the project provided. In some sense the project should have experienced more of these problems, because those areas most isolated were not well enough organized to receive help or be aware of the potential help offered by the project. Therefore, if total provinces were to be covered and not specific communities, geography or travel would become an even greater obstacle.

Examples of the impact of geography were probably greatest in the jungle provinces of Morona Santiago and Pastaza. In those provinces, travel was strictly by foot or by air, with 8 hours by foot equal to 10 minutes by air. Air travel was always contingent on the weather and availability of flights. Supervision trips were often delayed. Courses held in weather that did not permit air travel were poorly attended, or promoters had to walk several hours to attend at least part of the course. Consultants brought in rarely had sufficient time to visit all of the provinces and often the most isolated sites were bypassed due to logistical reasons. The effect of not hearing information firsthand was not apparent, although one can never calculate the moral encouragement such meetings might have had.

Air travel was handled by Mission Aviation Fellowship (MAF) who flies for a variety of mission groups and governmental entities. With so many

organizations using MAF, scheduling flights was a bit more complicated. The increased complications in scheduling would not be incurred if one had its own project plane; however, there was a significant reduction in overall cost using MAF transportation. In scheduling with MAF, the project did not have priority as did emergencies and other MAF business. This fact rarely cancelled project activities, but on occasion project activities did have to be rearranged or scheduled at a less preferred time.

Geographic problems were not isolated to the jungle provinces. The two highland provinces of Bolivar and Chimborazo have communities that are hours off the main road. Some communities in Bolivar are only accessible by foot in good weather. During the rainy season dirt roads turned to mud or rocky ruts. More than once project personnel had to sleep in their cars due to bad weather or leave a car in a predicament that only a few good hours of sun could resolve. These less than ideal conditions translated into hours and hours of travelling time for supervision trips. Typically the Quito personnel spent more time in transit than in onsite supervision. The summation of the geographic constraint was to isolate the project personnel, reduce the potential number of supervision trips, and slow the pace of development in general.

The infrastructure of HCJB was a positive feature in terms of name recognition; on the other hand personnel had to enter through and abide by that infrastructure. This limited the potential staff people, because all missionary personnel had to be accepted through a screening system that examined areas such as personality, stability and spiritual beliefs. All personnel were also required to be self-financed, typically through churches or personal friends. Utilizing the HCJB personnel structure, it was impossible to recruit and bring on new staff in less than six months. The usual time period after first contact was one and a half to two years. As a result, the project only received additional personnel as they came to the mission and were accepted. The lack of immediate personnel was one of the primary reasons for cancelling the project in the province of Loja or expanding in other provinces.

A second constraint within the HCJB infrastructure was the policy of home leave. Since missionaries are supported by friends and churches in North America they must go home for longer periods of time to maintain relationships with those supporters. This home leave was less frequent than with organizations although longer than most home leaves. Therefore, each project area experienced one loss of personnel for a period of six to nine months during the project. Usually those responsibilities of staff on home leave were covered by co-workers, although all of the activities carried on prior to home leave could not possibly be continued during these times.

Experience in the field of development was another limitation of personnel. Only one MAP advisor, Richard Crespo, had experience in community education

and training. All of the other staff learned most of their expertise through consultants, in-service workshops, and on the field experience. Without preconceived ideas, the staff was innovative as they developed training techniques and community education methods. This effect resulted in an emphasis on structuring the project to the community needs; nevertheless, it was still necessary to experience most of the slow beginning phases of the learning curve.

Throughout the project, personnel constantly provided one of the greatest strengths and weaknesses of the project. Given adequate personnel, the outcomes in Loja and Pastaza undoubtedly would have improved. Given different personnel in the other provinces, it is difficult to envision any significant increase in accomplishments. As is true in any teaching setting, the end result is really a reflection of the teacher. Therein lies part of the answer for the project's success with community changes. The project had excellent teachers on the project staff and at the community level in the promoters and rural aides.

A third constraint will inevitably be experienced by a PVO attempting to integrate with a national health care system. The size and scope of a national system mandates a slower more bureaucratic approach. In comparison a PVO is smaller, more flexible and narrowly scoped. The resulting two processes of development will thus move at very different rates.

For this reason, the progress of the project was profoundly affected when the project integrated with MOH in 1980. As the government took over all initial promoter training, the project had to wait to see if the promoters already trained would be accepted into and pass the government course. In some areas like Pastaza, it was necessary to wait two years before the first promoter training course was offered. Supervision was also controlled by the government. Who would supervise and provide continuing education courses for specific promoters was all determined by the MOH. In summary to integrate with the MOH the project had to adjust its perspective to that of the national system. The freedom to provide education on health care issues continued although only in a government defined sector.

The MOH also had to work through national policies on areas such as curriculum development, what curative skills should a promoter have, which drugs if any should a promoter distribute, would the promoter be paid and by what mechanism. All of these questions and others were analyzed at a national level with a variety of inputs. The project was privileged to have a part in the formation of such policies, and thereby was able to integrate in a manner that readily applied some findings. However, such policy decisions take a great deal of time at the national level, and the project found itself in a state of limbo for about a fourth of its duration, not desiring to

move outside the control and authorization of the MOH. Integration therefore proved to be a mixture of successful application and external constraint, defining and re-directing the scope of the project at its midpoint.

A fourth constraint was experienced in reference to the local communities. Both the highland and the jungle cultures had a strong community structure with most decisions made through the community leaders. These leaders provided the opening to work with the communities and a good link to the community infrastructure. However, a few visionary leaders were not sufficient to change an entire community. Therefore, the project worked a great deal on community education through the local promoter.

The lack of community level support was initially felt in all the areas. The constraint was exacerbated by the slowness of the educational process. It was complicated by the community's desire to receive immediate results in the form of curative care from the promoter and not education. Therefore, the communities as a whole were slow to accept the role of the promoter and support the project. This resulted in promoters becoming discouraged and communities not realizing the full benefit from the promoters.

Over time and with some curative emphasis and persistence with education, many communities became supportive of the promoters. Once the community became supportive, many new organizational demands were requested of them. Communities had to organize in order to raise community funds for hand pumps. They were forced into new cooperative arrangements with outside entities, and inter-community cooperation was required to receive aid.

These semi-isolated communities had little organizational experience except to plan for group workdays and school functions. In such new areas, uneasiness and reluctance to proceed would be expected. The project therefore had to include leadership and community organization training so that the project would have some grassroots level input.

Those areas which did possess more organizational ability seemed to progress faster. The indigenous associations of Morona Santiago and Chimborazo began the project with health commissions as a part of their organizational structure. These commissions helped facilitate the planning and management of the project. For this reason those areas were chosen for new phases of the project like agricultural assistance, hand pumps, water filters, etc. As a result the more organized and developed the area, the more resources they received. This paradox of development was never successfully resolved by the project.

Another factor which had an impact on the community's acceptance of the project and ability to organize was that some communities were located in or near politically volatile areas. These communities often received false input on the "true" goal of the project from outsiders. As a result, some re-

sistance was experienced toward the project solely because it was originating from a North American institution with a religious foundation in evangelical Christianity. Fortunately these communities only made up a small minority of the total number included in the project.

In summary, these external constraints which revolved around geography, personnel, the government, and the communities all slowed the development process. However, each area probably would not have been avoided even if foreseen, because the goal of the project was to overcome problems effected by these constraints. The project sought to probe into difficult areas which demanded change, and change inevitably met resistance.

WEAKNESSES

The process of development was limited or slowed by certain factors which would have been changed in retrospect. In some cases lack of personnel or experience could be cited; in others, trial by fire was the only means to uncover the need to change.

The data collection system and documentation area became one of the most difficult areas to keep up. Government sources were inadequate to obtain true baseline data for each province. All attempts at community surveys by promoters were met with resistance and suspicion. Years of cultural prejudice had made the indigenous populations reluctant to give out any personal information. Observational and testimonial data were gathered at the outset; although due to lack of experience the data was not collected in a systematic fashion.

During the project, data collection was taught to the promoters. This also proved to be difficult since statistics and reports are typically not seen as useful in the promoters eyes. Certain statistics are culturally difficult to obtain. For example, the Shuar often forget infant deaths because children are not viewed as community members until a few years after birth. Therefore, with a high frequency of infant deaths, many go unrecorded.

After the government integrated the promoters into the MOH, certain statistics were collected regularly. Often times these reports were lost and few arrived at the national level. This is true of numerous reports gathered at the community level. Herein lies a ready source of data that the project should have been collecting regularly. Currently it would take an enormous effort to locate the pieces of data still available with probably only meager results.

The nature of this pilot project did not provide great incentive to statistically document the project. Lacking personnel and experience in the area of statistical analysis, the project opted to rely on readily available data through promoters and utilize observational findings. Even

observational findings were lacking in documentation. The typical day in and day out travel, courses and problems often went unrecorded. From the staff's perspectives, such ordinary events were nothing to write-up formally, and time typically didn't permit laborious hours of documenting such details. As a result, part of that which is documented in this report was recalled by those original staff members with the project.

The difficulties outlined in "Major Constraints" that dealt with communities and their infrastructure also created weaknesses in the project. These are areas where western cultural bias confronted the culture of these indigenous populations. Typically the result was blockage in one area of the project that undoubtedly had ramifications in other areas. The previously discussed western emphasis on data versus the indigenous emphasis on action would be one example. Another example is with the drive for participatory planning through health committees. Had health committees been easily established at the outset, a convenient, very "participatory" approach to health care would have been possible. This was not the case however, and much effort was exerted at the outset which could have been directed in other areas.

The resistance to the formation of health committees arose for several reasons. In the indigenous communities most of the administrative and organizational work is done by a few trusted leaders. An agreement was not necessary for the people to feel represented. Additional workloads on the already over-taxed leaders could not be handled, and often in the jungle, delegation was not a feasible alternative because there were only three to five families in the entire community.

In light of the existing community structure, original planning sessions were conducted only with the trusted leaders. The first community health committees functioned poorly or were non-existent. According to development theory the lack of participation by community members would be viewed as a major weakness. Following these theories the project exerted additional time and energy fruitlessly in an attempt to improve community participation. It was interesting to note that as the project progressed, community health committees began to function much better, especially in the fourth year; suggesting that participation by community members may be more of a result of development rather than a critical input.

During the first two years of the project community education was left up to the promoters. Normally the promoters reverted to the formal lecture approach under which they received their education. It became apparent that the promoters were grasping the idea, although this was the end of the line. With dry and boring teaching methods, few if any community members understood the material. Community education therefore became a weakness which the project sought to resolve midway through the project.

The first solution was to train promoters in community education techniques. This was accomplished through the consulting trips by Dr. Ted Ward in order to train the promoters in non-formal education methods. These educational methods were then modelled by the project staff. Supervision of the content of community education was then integrated with supervision of the method of education. Thus the entire area of community education was moved from a weakness to a strength through the emphasis on non-formal education. If the project could retrace any of its footsteps, certainly beginning with the first promoter course, there would have been an emphasis on how to communicate as well as what to communicate to the community at large.

VI REPLICATION

When the government began training all health promoters in 1980, integration or a form of replication had already begun. The principal form of this integration was in the curriculum and material used for promoter education. Included in the integration were promoters that the project trained who entered the government courses and became official health promoters for the government. The integration also included project staff who became government supervisors for aides and promoters. Reasons why the integration progressed smoothly can be found in the following sub-section on Methodology under MOH Association.

The project exemplified the value of health promoters and the capability of the indigenous people to grasp and promote simple preventive and curative health concepts. Undoubtedly the Alma Ata conference which was attended by MOH officials, as well as the availability of international funding for this type of primary health care worker had a significant impact in moving the Ministry of Health (MOH) toward involvement in this type of health care. The presence of this project and other smaller ones helped the MOH to more clearly realize how such a system would work in Ecuador.

The later role of expanding the government outreach to isolated areas was more a reflection of the intercooperation and extent of the project integration into the MOH system. Currently the project is demonstrating potential areas for continuing education and expansion of promoter capabilities. Such areas include nutrition education, eye care and promotion of appropriate technology items like clay pot water filters. Government officials are abreast of these new areas, although like most of the integration efforts, most of the transfer of information has been through oral communication. Few formal documents describing training methods and applicable experiences have been written. It is hoped this document will meet this need for a formal sharing of valuable information.

COST

The actual costs to replicate the project are derived from the summation of appendix C on direct costs and appendix D on in-kind contributions which amount to \$912,653 (dollars). The majority of this figure is derived from in-kind contributions by the various organizations and is explained more fully below. The total figure represents actual costs without an inflation factor added. Inflation did become a significant factor in Ecuador during the last twelve months of the project. During this time the currency of Ecuador (sucres) was drastically affected by the worldwide recession and consequently was devalued about 100%. Therefore, the fourth year expenditures in dollars were significantly reduced due to devaluation.

A. In-kind contributions

The in-kind contributions were significant because they include all of the personnel related costs and goodwill of the numerous missions involved in the project. The approximate cost of personnel is presented in appendix D. These personnel costs would not reflect true costs of a government program, but might be appropriate for certain PVO's. The personnel were all missionaries working out of dedication to their belief in the message of Jesus Christ. All were therefore willing to work for less than standard wages considering their professional backgrounds. Most were professional doctors or nurses primarily serving as supervisors and teachers.

It would be recommended to use less technically skilled personnel to supervise promoters. A more accurate labor estimate could be obtained through the accounting of person months worked. During the entire 51 months of the project there were:

217 Professional Months

71 Non-professional Months

116 Administrative Months

The indirect costs associated with personnel were also a major in-kind contribution. These would include transportation and moving to and from the field since all but one staff member were from outside Ecuador. Language training and cultural adaptation were all established prior to the project, yet a great deal of time and resources were needed to acquire these necessary skills. Other important costs for expatriates working in other countries becomes the governmental relationships needed to enter the country, legal protection, and affiliation with a recognized organization. These were all contributions made on behalf of the staff by the participating organizations.

Goodwill makes up about 40% of the in-kind contributions. This would be a conservative accounting figure for goodwill given:

1. The number of years all of the organizations have been involved in Ecuador.
2. The size of those organizations.
3. The widespread impact their hospitals, radio stations, and missionaries have had on the indigenous groups.

The impact of radio not only comes from HCJB shortwave broadcasts in Quichua, but also from indigenous managed stations in the rural areas. These rural stations were begun by the Gospel Missionary Union (GMU) who

contributed personnel and/or resources to the project in those same areas. Since these missions were the first to broadcast in the indigenous languages, they hold a prominent image in the eyes of the indigenous people.

Because HCJB and GMU are also involved in radio, the project was able to capitalize on this advantage in another form. Typically all communication between Quito and the field personnel was done by radio. This advantage expedited many facets of the project and helped resolve problems of materials, transportation, meetings, etc. These lines of communication were then serviced and repaired when necessary by HCJB or GMU engineers at no cost to the project. Certainly consistent communication with field staff is critical for the advancement of any project. In most of the highland areas telephones would have been a feasible alternative; however, in the jungle areas radios are typically the only means of rapid communication.

The maintenance cost of all the vehicles also became an in-kind contribution. All the vehicles were maintained by Technical Support Mission. The actual labor costs were reduced because nearly all the employees of this organization are missionaries whose salaries come from other sources. All parts costs however, were actual costs within the country. Therefore, an estimate of the in-kind contribution by Technical Support Mission for the labor portion of the vehicle maintenance has been included in appendix D.

Transportation costs were inordinately low for two reasons. The cost of gasoline in Ecuador was subsidized by the government. Therefore, the project spent only 20 -35 cents (U.S) for each gallon of gasoline. The second factor is that all air travel in the jungle was done through another missionary organization (Mission Aviation Fellowship) whose costs were subsidized. All the pilots' salaries as well as a percentage of the equipment costs were from sources other than the flying service. The project paid about 10% less than would have been charged by a commercial, profit oriented group for similar services.

Transportation costs in the highland areas versus the jungle areas were nearly comparable when the cost of the vehicle was depreciated over five years and maintenance costs were included. Both types of transportation benefited from in-kind contributions which makes accurate comparisons impossible. Most likely a flying service that was profit oriented would increase the cost some 10% to 15%, although currently non-profit flying services cover a large portion of Ecuador's jungle area. Part of the explanation for the similarity in costs is that the air transportation was rented on a per hour basis and thus shared with all users of the service. The vehicles on the other hand were purchased and maintained exclusively for the use of the project. If a similar non-profit type of air transportation could be utilized in replicating the project, the cost of covering the jungle areas on a provincial basis would not be widely different from a central highland province where project vehicles would be used.

B. Contribution from USAID Grant:

The direct cost figures in appendix C can be analyzed from a variety of viewpoints which may provide helpful indications for replicating this project. It should be remembered that no adjustment has been made for inflation. In-kind contributions have some influence on these figures; therefore, the actual cost/promoter trained or cost/hand pump installed type figures will include only direct costs and will be conservative figures.

Start-up costs cannot be accurately estimated since the organizations were already in place and some promoter training was going on in Morona Santiago even before the project began. The direct costs of start-up included things like vehicles, educational materials, supplies, films, projectors, generators, etc. It is estimated that the total cost to begin the project was \$44,400.

True costs of initial training can only be calculated on the first 18 months experience of the project. After this time the government took over all initial training. To train the initial 142 promoters the project spent about \$103 per promoter. This would include only three or four courses of approximately five to six days duration per course.

Ongoing supervision took place during the last two-thirds of the project. During this time 55 promoters were supervised at an average cost of \$75 per promoter per year. This would be a relatively high figure because the number of promoters supervised was determined by the MOH and limited by the number of training courses the MOH was able to conduct. Most of the project personnel could have supervised more promoters if allowed to by the MOH. In Morona Santiago however, one nurse with the assistance of two rural aides supervised up to thirty promoters. It was apparent in this jungle setting that a ratio of one supervisor to ten promoters was too great to provide effective supervision. The ideal number was never able to be ascertained because the project sought to integrate with the MOH system which had a nationwide goal of one supervisor to five promoters.

The above costs of supervision do not include continuing education courses. These courses were generally conducted in specialized areas such as nutrition or sanitation, and the courses provided a more in-depth coverage than the information received in the initial courses. It was through these continuing education courses that the complete scope of the promoter training was fulfilled. Included in these courses were new technologies like water pot filtration which broadened the promoters experience and knowledge base. The cost of these continuing education courses was about \$220 per promoter per year.

The capital cost of \$10,390 in the third year was for the purchase of hand pumps. These hand pumps were successfully installed in the province of

Chimborazo. The cost to install these pumps was shared by the community who dug the well and paid for the piping and the construction materials. The community cost was approximately \$329 and the pump cost was \$258 per pump. Therefore, each pump installed in a highland situation cost \$587. This would not include the cost of transporting and storing the pumps which was usually done by project personnel.

STRUCTURE

The basic organizational structure was simplified because of a small staff. Each of the four field areas in the respective four provinces had one coordinator who reported to the director in Quito. Along with the director in Quito was a fulltime assistant that specialized in appropriate technology and a part-time educational specialist that also contributed planning and evaluation skills. Most all of the field personnel supervision was performed by the director. The result was about 50% of the director's time was spent in travel, visiting each of the four provincial areas in order to supervise each field once every two months. The other Quito based personnel would spend about the same amount of time in visitation of project areas. In replicating the project in similar geographic areas, a significant amount of administrative or supervisory time should be reserved for travel to and from the project areas. It would be doubtful that a supervisor traveling half-time in the project areas could supervise more than four to five isolated provincial areas effectively.

On the provincial field worker level less time was needed in travel to supervise each promoter; however, each field worker trained and supervised many more people. The minimum number directly supervised was six in Bolivar. After supervising these promoters about four times a year it was apparent in this highland setting that more than six promoters could be covered simultaneously. In the jungle area the field workers only reviewed promoter activities three to five times a year. The field worker and rural aides in Morona Santiago covered 29 promoters. To provide continuing education and supervision for promoters in the jungle it was decided that five health promoters per supervisor would be near the maximum. This was also the goal established by the Ministry of Health.

Each field worker lived in or near the communities where they supervised promoters. For major training courses people were often brought in from Quito or consultants came from outside the country. This arrangement seemed to provide additional credibility and importance to the training courses and still maintain a personal relationship on the local level. This encouraged trust and acceptance and greater comprehension of the training course material. Most all of the continuing education courses were carried out by the field-worker in the local communities. The constant presence of the locally based field-worker helped eliminate cultural barriers like prejudice and lack of understanding of the community organization or their needs.

Only one field worker knew the indigenous language. All the courses were taught in the trade language (Spanish) with some translation depending on the area. Working only in Spanish did have an impact on two areas. First, non-Spanish speakers were forced to obtain information through translation. This situation was more often encountered in the jungle areas. These were the same areas where literacy programs were eventually begun, primarily to provide access to the government training program which was only in Spanish. The second group affected was the indigenous women who speak little Spanish. The indigenous women typically take the role of caring for children and the home; consequently they have less contact with the trade language. This is especially true in more isolated areas in the highlands and most of the jungle. These women are not only dependent on the promoter for education, but the language barrier also hindered them from becoming promoters. In replicating the project a stronger emphasis might be placed on literacy of the national language during the initial phase of the project.

All of those living in the field took three distinct roles during the four year project. First, they were "community organizers". Their task was to establish health committees and organize a process where communities chose individuals to be trained as promoters. This initial phase was not more than six to nine months. This process would have taken much longer had the associations not been seeking this type of development. Prior communication coupled with an established relationship also helped expedite the process before the grant began in October 1978.

The second role the field workers took was that of "trainer". They became the organizer and focal point of the initial courses regardless of who came in to do the teaching. The 142 promoters trained were dependent on the field-worker living near by for moral encouragement, further insight and as a trouble shooter for difficult situations. After the initial training the field workers took a third role of "supervisor" and "educator of additional material". In addition they served as guides for the project by observing and planning ways to further the educational process according to the needs of that particular area.

Certainly the technical background of the "organizer/trainer/supervisor" for this project would be difficult to replicate due to cost factors for these types of personnel (see sub-section on PERSONNEL). Nevertheless, the advantage of locating the immediate supervisors of the promoters and aides in the local communities were readily proven. The supervisors acting with the local aides and promoters will be more successful if a degree of flexibility and self-determination are provided for each area to determine their own program emphasis and need within the confines of a larger program. A degree of local control always seemed to return substantial benefits to the overall development process in spite of the logistical complications it apparently added.

There existed a unique structural setup between the project and other organizations. This situation would be different for every project although the principles followed were relatively simple. The project determined at the outset to only work where other missions had ongoing projects. This provided an established and trusted link into the community infrastructure. As a result of this principle of following in others footsteps a great deal of the suspicion and reluctance to cooperate was avoided. People were more interested in what the project had to offer and not why the project was there.

The above principle was then coupled with the principle that the local infrastructure should be utilized. This facilitated the project because those who were unfamiliar with the outside organization were always familiar with the local infrastructure. As mentioned before, the infrastructure utilized was the Indigenous Evangelical Associations. Utilizing these structures encouraged greater local involvement in planning, decision making, administration, etc. The support and utilization of the local infrastructure helped build credibility for the project as well as foundation for future development by these underserved populations.

A third principle followed was to coordinate the project activities with other like minded organizations. This helped avoid duplication of efforts and the typical confusion on the local level that goes with duplication. It also helped divide the project costs among several organizations. There were at least seventeen separate mission organizations and various governmental entities involved in some manner in the project. A drawback of this type of structural base is that a great deal more time must be dedicated to set up, coordination and communication. As a result of the inevitable expansion of administrative responsibilities in Quito, there was an associated expansion of the project impact on the provincial level.

The structural base for the project was not ideal. Often personnel were overworked due to pressing community and project demands. It would have been preferable to expand the highland and jungle outreach and have regional coordinators. This was attempted for a few months of the project, although loss of personnel due to medical reasons made this type of structure impossible. The larger infrastructure however was built on principles which could be replicated. The project results would promote the idea of inter-cooperation among the development agencies and involvement of the locally based infrastructure.

METHODOLOGY

Certain parts of the methodology of the project were refined through trial and error, others were part of the original design, and others still remain as open ended questions. This section will only examine a few specific

areas. The following areas will be discussed:

- Promoter's Role and Renumeration
- Training Techniques
- Community Involvement
- MOH Association

A. Promoter's Role and Renumeration

The methodology followed initially in training health promoters was to establish them as a locally based preventive health educator. The idea was for the the promoter to create awareness of the cause of the disease and means to prevent such disease. Some very basic curative skills were taught; however, the curative role was primarily left for the rural aides and/or rural doctors.

At the start of the project communities did not readily accept the free advice of the promoter. Behavioral changes were involved which took more time than was originally predicted in order to convince villagers of the benefits. Typically there was a tendency to wait until the benefits were observable before personally adopting the practice. This was even true for the promoters. Few were practicing what they preached. It became obvious that the first role of the promoter had to be that of a living example and then an educator.

The role of the promoter was further complicated by community expectations. With training from western medical personnel it was expected that the promoter could cure the stomach ache and keep the babies from dying. This became such a compelling cry that the curative training of the promoters was expanded. Training in diagnosis and treatment for specific diseases was given to the promoters along with a set of basic medicines.

It was observed that the expanded curative training and utilization of medicines did provide the promoter with the credibility needed to make in-roads into the health of the community. After receiving a tangible benefit from the promoter the community seemed more willing to listen and try the preventive measures. This mixing of the curative and preventative roles continued after the government began training promoters, although only MOH trained promoters were allowed to distribute medicines.

The distribution of medicines became an unplanned experiment. The government promoters in the highland were not allowed to distribute medicines by government order. With a lack of rural doctors in the jungle area the project encouraged the MOH to permit the promoters, often the only accessible medical person in the jungle, to continue distributing basic medicines. The results indicated that trained promoters did have the abilities to properly distribute medicines. A survey of promoter diagnosis in the final year of the project (see Appendix E) indicated only 3% of the time were medicines

given that might have been harmful. Those particular medicines were declared harmful only because of the high potential of pregnancy for women of childbearing ages. Approximately 86% of the time the medicines given were appropriate for the given diagnosis. These same promoters are continuing to distribute medicines with government approval in a manner which shows they are fully capable of the job.

The remuneration by the promoters changed throughout the project. All promoters began as volunteers. In Morona Santiago some of these same promoters continue as volunteers demonstrating that such a system of remuneration is possible. The voluntary system of remuneration did experience a major change after 1980. All those who completed government training were given stipends and few were willing to volunteer for similar work without pay.

Even before the government began paying promoters, some of them were receiving a small income from medicines sold. This system however was regressive in nature. For as the health of the community improved, the need for medicines decreased. With the drop in medicine usage there was an equal decrease in the income from medicines. This remuneration system provided little incentive for the promoters to continue strong preventative efforts.

Partially due to the above situation, early volunteer promoters began seeking some form of a regular income. The other mediating factors were the increasing amount of time required by the promoters away from their regular work and the growing responsibility being given the promoters by the community and the project. This experience would indicate that a natural consequence of asking the health promoter to take on greater responsibility will be a tendency for the promoters to seek greater monetary recompense. The current experience with long time voluntary promoters in Morona Santiago would speak against this "tendency", probably indicating personality differences will play a part in determining if a promoter will continue as a volunteer or eventually seek remuneration.

In summarizing the role and remuneration methodologies used, the word "numerous" would be an understatement. The role utilized by the project certainly stressed expanding responsibilities, leaders within the community, and some curative emphasis. The remuneration methodology showed most systems were feasible for a short time, but no single system was tested over a long period of time. Undoubtedly the wisest course to follow would be the one of common sense. Continuing to evaluate and maintain the monetary and non-monetary rewards so that they are commensurate with the work and responsibility of a promoter as well as equal to or greater than the alternative occupation, typically farming in the rural areas.

B. Training Techniques

The training was performed in three stages, project personnel to promoters, promoters to the communities, and supervision of promoters by project

personnel. The methodologies utilized in the training of promoters became the same methodologies used by the promoters in educating the communities. For example, training of the promoters was done in a local community, just as the education of the communities was done within the local community. Only rarely was a course held outside the region on a large scale in order to reduce costs and combine efforts. Within the accustomed surroundings, promoters were able to grasp the concepts through practical examples far better than in a foreign setting.

Non-formal education became the basis for all educational activities. Dialogue around topics, simulations and participatory activities replaced the typical dry lecture approach. Specific non-formal education methodologies were first introduced as a part of the training of promoters. Then these same methodologies were incorporated into the curriculum as courses on community education. The benefits produced by these courses were felt throughout the duration of the project.

Within the framework of non-formal education, certain key factors were emphasized. All the material was broken into short simple concepts. These concepts were then taught through repetition and by packaging and re-packaging the same concept in a variety of ways. An example might be the concept of the transmission of disease. Films were shown, then demonstrations were presented of how rain could carry contaminated soil to a stream and then down the river. Some lecture would be included, followed by a human chain demonstration where each person represented a part of the cycle of disease transmission. Afterwards the same film would be shown, discussed, and shown a second time.

Another key factor was personal supervision. After each course, follow-up education was done on a one on one basis during supervision trips. Typically the promoters and/or aides were supervised four to six times annually or every two to three months. Contact with the promoters would be more frequent due to courses and other development activities such as hand pump installation. No test was made of an ideal supervision schedule; however, in those provinces where promoters were supervised less than four times annually the project saw slower progress overall. The recommendation would be to emphasize a system of onsite personal supervision, utilizing the supervision time for review and continuing education.

The benefits of going to the community to provide services cannot be over-emphasized. Part of the success as shown by changed behaviors came from the fact that the promoters constantly were living in or going to the communities to provide services. This eliminated the common barriers of culture and prejudice which commonly exists between the indigenous population and the mestizo population. This was demonstrated by the project with the government vaccination program. In Chimborazo the provincial government preferred to only vaccinate out of the government sub-centers, clinics, or

schools. The other provincial MOH offices allowed the promoter and supervisor to take vaccines to the communities. The results were dramatic. Upwards of 80% of all children under five received some vaccination in all areas except Chimborazo. In that province less than 60% of the children surveyed were vaccinated.

The last factor dealing with training methodologies which would be recommended to replicate is flexibility/creativity. Flexibility/creativity in terms of the methods used to teach materials, the manner by which materials were covered and the methods that were utilized in applying material to the local situation. Essentially after the basic curriculum was determined the local project personnel and promoters became the experts on how to communicate and apply the materials. This can only be true if the project personnel live within the culture of the people.

An example would be the handwashing stations established in Morona Santiago. It was determined locally that an emphasis on simple handwashing before meals would eliminate a common link in the transmission of disease. Since most handwashing was done at the river, the concept of a specified station provided easier accessibility and a stronger reminder. The desire to remind the family members and integrate this habit into their daily living patterns created the concept of a posted commitment chart. As each family desired to participate in the program the promoter provided them with a large colored chart. On this chart the costs were outlined and the jobs were assigned to each family member. Where the station would be located as well as who would get the water and who would assure there always was soap at the station, were all placed on the chart. Each family member then signed their seal of commitment to the chart and the promoter followed up to encourage the family with their new health program. Similar flexible and creative training techniques were tried in other project areas with other areas such as boiling water, building a latrine and starting a family garden.

In summary, the training methodologies of simple concepts, taught repetitively with close personal supervision that maintains a degree of flexibility/creativity and moves into the community setting to provide the training and service were all demonstrated in the special program to train water technicians. In December of 1981, when the first four hand pumps were installed in the province of Chimborazo it was evident to the project personnel that it would be necessary to train water technicians who would be responsible for the ongoing maintenance of the pumps when any major breakdowns occurred. It was also decided at that time to train the water technicians in such a way that they could also be responsible for the actual hand pump installation. Several weeks of training were carried out in a classroom type situation with an actual hand pump available for reference. Tool purposes and uses were taught at this time as well as pump part names. There were also discussions on pure water and the feasibility of pump use as it compared with other options for pure water sources in the Colta area. When

adequate preparation had taken place in the classroom, the five prospective water technicians were then taken to actual field sites where they were involved in the hand pump installation under close supervision of project personnel involved in the training program. While involved in the work of installing pumps it was decided by those involved in the training program that the water technician should also be experienced at the actual development of a well site. Therefore, well site development (construction) was also included as a part of the ongoing training of the five water technicians. This training process took about one year.

Due to the experience gained through the training program in Chimborazo and as a result of a request from the Health Commission of the Indigenous Association in Morona Santiago a program began there in April, 1982. The ongoing program in Morona Santiago is different because an emphasis was put on well site development from the beginning. Training in hand pump installation will be included upon adequate understanding of the well construction process.

C. Community Involvement

Ideally participation would be from all levels of the community in all stages of the project. This was followed in principle but not in strict practice. It became evident that working within the local community structure was far more successful than beginning a new community structure (i.e. health committee) to provide community participation. This top down approach to involvement was initiated on both a community level in Pastaza and on the association level in the other three provinces. In those provinces with a stronger infrastructure and broader based representation, the project progressed more rapidly. In Pastaza and Bolivar where the community representation was smaller and slower to develop, the project continually experienced barriers toward development.

The recommendation that one initiate the project with input from and through the channels of a broadly based local infrastructure does not preclude input from the bottom up. It merely delays stronger local involvement until later in the process. The project had success with bringing in true community involvement through health committees after the role of the promoter and nature of the project were better understood by the communities involved in the project. These community based committees began to function in the third and fourth year of the project depending on the area.

The project did attempt to form health committees from the start of the project, although little was accomplished in those first years. The only advantage of the health committee or any other locally representative body was in the choosing of the original promoters. Some form of locally based cross-sectional representation would be recommended to choose the promoter. This will avoid the natural tendency to only choose a member of the elite

class with strong political ties. If the choice is made outside of a community body, few if any will likely seek out the promoter for services. In other words all of the training of the promoter will probably never be implemented in the lives of the community members.

Included with the recommendation to work within a strong local infrastructure would be to pass on to that infrastructure control of specific areas of the project. Within this project the local community had control over who would be the promoter, what were the areas of most need which the promoter should handle first and how the community was going to finance new projects like hand pumps and latrines. One disadvantage of a government based program is that it by nature must retain more of the decision making at the national level and not a local level. If this tendency could be reversed, the project experience would indicate a stronger community acceptance of the program.

D. MOH Association

Because part of the original goal of the project was to be a model for the government to expand services to underserved areas, the association with the MOH was critical. This association was begun before the project started and was carried on throughout the project. Part of the advantage the project had was that it was viewed as an expansion of an already trusted and ongoing commitment in health by HCJB. Since HCJB already had two hospitals in the country and a medical caravan service to many rural areas, the primary health care project was accepted as a part of the existing HCJB health care system.

The primary recommendation would be in the area of planning and information. The original planning for the project was done in conjunction with or under the advice from the MOH. As the project progressed the MOH was given information about the progress of the project, typically on a person to person basis. These two areas helped to remove suspicion of the project's goals, intentions and activities.

As the MOH planning became more clearly defined, the project sought to assist in the implementation of these plans. An illustration would be the tentative curriculum developed by the MOH before initiating their program. This same curriculum was used by the project months before the first government training course was held.

In certain areas it was possible to directly coordinate activities. Where separate MOH programs like **Leche Avena** could be integrated into promoter activities, the project sought to help the promoters include these programs in their community visits. This was also true of vaccinations and studies by MOH. In some areas MOH officials would accompany project personnel and a promoter into areas for studies.

Another more difficult recommendation would be to alter a project's direction in order to coincide with a MOH plan. This area created frustration for the project because goals could not be reached as rapidly, but the relationship with MOH was greatly improved. This became important when the project began to more closely integrate with the MOH. An example would be the willingness of the project to release promoters already trained by the project to be supervised by other MOH supervisors. As a result of these and other alterations by the project, certain suggestions were more readily accepted by the MOH. The potential benefits of promoters distributing medicines in the jungle areas would be one example. The utilization of promoters for vaccinations and *Leche Avena* programs would be another example. The MOH was willing to allow the project to continue introducing health promoters to new health related topics in spite of a desire to standardize all health promoter training. As a result of the positive associations with the MOH, the project was able to integrate and experiment in a variety of areas.

PERSONNEL

Replication of the type of personnel used in the project would be recommended only if voluntary personnel were available. Such a case would occur with other missionary groups or humanitarian type projects where personnel funds are drawn from other budgeting sources. It would not be recommended to utilize doctors and highly trained nurses as health promoter teachers and supervisors if the full cost to employ and locate these professionals in an isolated area were borne by the program itself.

In this pilot type project the use of highly trained professionals did provide credibility to the project. The program never experienced difficulties or questions concerning the validity of the material taught. The MOH was also more willing to follow suggestions from individuals on their same professional level.

The recommendation to not use the same type of personnel in a government based program is not solely based on cost reasons. The experience in Morona Santiago and Chimborazo demonstrated that rural aides could adequately handle supervision requirements. Training in supervision and personnel management was helpful in the early stages to teach those aides how to be supervisors. The occasional visit of a nurse or rural doctor was also beneficial for the rural aide to maintain credibility with the health promoters.

The project had little experience with utilizing rural aides as teachers; however, non-professionals were used in the promotion of potable water and sanitation. An experiential background was sufficient to teach the basic course. If professionals did teach the courses it would be recommended not to have them make the arrangements for the course. Project personnel often found a majority of their time was given to the logistics surrounding each course.

VII RECOMMENDATIONS

COST

(The following costs do not include personnel costs. A national program would capitalize on economies of scale which should reduce all of the following costs according to the size of the program. This information should be used only as a guideline.)

1. Cost to initially train 142 promoters was \$103/promoter.
2. Cost to supervise 55 promoters was \$75/promoter/year.
3. Cost to provide continuing education for 55 promoters was \$220/promoter/year.
4. Cost to train five water technicians was \$500/technician.
5. Cost to equip five water technicians was \$400/technician.
6. Cost to install one hand pump averaged \$587/pump including labor, materials and pump.
7. Cost per beneficiary of the 39 hand pumps installed was \$4.58/person.
8. The start-up costs totalled \$44,400.
9. For 51 months the USAID grant totalled \$244,001.
10. For 51 months the in-kind contributions were \$668,652, primarily personnel costs and goodwill.
11. For 51 months the total project costs were \$912,653.
12. The total cost to cover a jungle province by renting air transportation would be comparable to covering a highland province through the use of assigned vehicles.

STRUCTURE

13. A centrally located director, traveling one-half time should not be responsible for more than four or five isolated provinces.
14. In a highland province, given personal transportation, at least nine promoters/rural aides should be supervised.

15. In a jungle province no more than five promoters should be supervised.
16. The supervisor of health promoters and rural aides should live in or near the communities where the health workers live.
17. The field worker should coordinate and participate in all courses providing continuity and moral encouragement for the promoters.
18. In areas where competency in the national language is weak, an emphasis on literacy should be included at the beginning of the project.
19. The local program design and direction should have locally based control by the field workers within the confines of the overall program.
20. The local infrastructure should be utilized to approach the community and begin a program. Organizing a new infrastructure (committee system, etc.) should not be initiated at the outset of the program.
21. Coordination of activities by agencies and organizations with a similar focus will avoid duplication and eliminate confusion on the local level.
22. Regional coordination should be used to facilitate local supervision. This would also improve coordination with the national administration. In such a case a degree of autonomy on the regional level should be provided.

METHODOLOGY

A. Promoters Role and Renumeration

23. The behaviors of the promoters is the first form of communication/education to the community. Therefore, initial emphasis should be placed on the health practices of the promoters.
24. Promoters should receive training in very basic diagnosis and treatment in order to create acceptability of the preventive and health promotive role.
25. Promoters should distribute a few basic medicines especially in isolated areas.
26. The income from medicines should **not** be a significant portion of the promoter's renumeration.
27. Renumeration for promoters, both monetary and non-monetary should be commensurate with the skill level and responsibility given to the promoter. This is especially recommended as skill level and responsibility are increased.

28. The remuneration scheme should provide income equal to or greater than the usual occupation (typically farming) for an equivalent time worked.

B. Training Techniques

29. Training courses should be held in the local area, for short durations, with close supervision between courses.

30. Non-formal education methods should form the basis of all courses.

31. All material should be taught in short simple concepts presented repetitively in various forms.

32. Personnel supervision should take place at least four times annually.

33. The supervision trip should be utilized for review of training course materials and continuing education on an individual level.

34. Training courses should be flexible according to the need of the local area.

35. The creativity of the promoters and field workers should be encouraged in the presentation and application of the material covered.

C. Community Involvement

36. A program should be initiated with the input from and through the channels of a strong, broadly based, local infrastructure.

37. Some form of a cross-sectional, representative body should choose the health promoter candidates.

38. Program control and power should be passed on to the local infrastructure used to implement the program.

D. MOH Association

39. Planning and initiation of a program should be in conjunction with the planning and current programs of the MOH.

40. Program progress should be regularly communicated to the MOH both in written and oral forms.

41. Coordinate as many aspects as possible with the MOH.

42. Alter program activities in order to follow changes in MOH plans. Do not resist changes in MOH emphasis.

43. Demonstrate and present to the MOH positive changes that will facilitate the national system in primary health care.

PERSONNEL

44. Do not utilize doctors and highly trained nurses as health promoter supervisors and teachers, unless cost is not a factor and strong credibility with the MOH is a priority.

45. Rural aides should be given training in supervision and personnel management before being assigned to supervise promoters.

46. Supervision of rural aides by doctors and nurses help maintain the credibility of the rural aide.

47. Rural aides and non-professionals should be utilized to teach beginning level courses for health promoters.

48. All the arrangements for courses should be made by a non-professional field worker.

ACKNOWLEDGEMENTS

Project Personnel

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Organizations

Asociacion Independiente del Pueblo Shuar Ecuatoriana
Asociacion Indigena Evangelica de Chimborazo
Asociacion Indigena Evanelica de la Provincia de Bolivar
Berean Mission
Ecuadorian Ministry of Health
Gospel Missionary Union - GMU
HCJB (World Radio Missionary Fellowship, Inc.)
Luke Society
Medical Assistance Program - MAP, Int.
Mission Aviation Fellowship - MAF
Missionary Church, Inc.
Oriental Missionary Society - OMS, Int.
Plymouth Brethren
Technical Support Mission - TSM
United States Agency for International Development - USAID
United States Peace Corp
World Concern

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Logical Framework Matrix

A. 1. Goal:

That the health be improved in Indian populations of five rural areas of Ecuador where existing mission agencies are already working.

2. Measurement of goal achievement:

- a. The adoption of improved health behaviors.
- b. The reduction of prevalent disorders.
- c. The improvement of health related environmental conditions.
- d. The provision of health care services to isolated areas.

3. Assumptions (as related to goal):

- a. Communities will actively participate in the health programs.
- b. The health needs identified in the health assessment will be priority needs from the beneficiaries' point of view.

B. 1. Purpose:

That the residents of five rural areas will have access to basic health services and will utilize those services including:

- community education for improved health
- primary, community level health care services.
- medical referral services.
- health related community development assistance.

2. End of Project Status:

- a. Village health workers will be functioning in 100% of the target communities.
- b. Acutely ill people will utilize medical referral services at the village health worker's recommendation at least 80% of the time.
- c. Initiate health related community development projects in the communities that have the organizational capacity to implement such projects.

3. Assumptions (as related to purpose):

- a. The GOE will recognize the program and view it as supportive of the government health system.
- b. Local leaders will legitimize the program and target communities will actively participate.

C. 1. Outputs:

- a. Participatory health assessment for each area.
- b. Community education (NFE) addressing prevalent, area specific health issues.
- c. Training programs for health workers.
- d. Primary health care system at the community level.
- e. Medical support system, including referral services and health workers supervision and medical supplies.
- f. More supportive environmental conditions (e.g. water, housing, sanitation, etc.).

2. Output Indicators:

- a. Agreement between the community and facilitating agency on the prevalent/crucial health needs.
- b. Community health committees functioning in the target communities agreeing with the community and village health worker on the specific health behaviors which need to be improved. Also that health committees in the above communities are taking leadership roles in the education programs.
- c. Functioning training programs.
- d. Health workers selected, trained and functioning in 100% of the target communities.
- e. Referral facilities identified, approval of program from local health worker's pharmacy stock at each of the training centers.
- f. Specific resource commitments from each community where development projects have been initiated.

3. Assumptions (as related to outputs):

- a. Reciprocal relationships between communities and facilitating agencies.
- b. Communities will respond to educational efforts and adopt the agreed upon health behaviors.
- c. The training that the health workers receive will enable the workers to give adequate primary health care.
- d. The communities will use this primary health system.
- e. The GOE will recognize and support the system by making government facilities available for training, supply supervision and referral.

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D. 1. Inputs:

- a. Grant manager and support services for the project.
- b. Consulting assistance for planning, evaluation, health assessment and community education.
- c. Training for facilitating agency staff.
- d. Resources for health workers training and supervision.
- e. Existing GOE health system for referral services.
- f. Planning assistance for health related development projects.
- g. Project funds.

2. Assumptions (as related to inputs):

- a. Vozandes Hospital will serve as the coordinating agency for the five projects, and will appoint a grant manager and provide support services.
- b. MAP International will provide (or sub-contract as needed) consulting services.
- c. The existing staff and facilities will remain committed to the programs for the length of grant period. No more staff will be needed beyond those presently on site.
- d. The GOE referral system will cooperate with these projects.
- e. MAP will provide planning assistance.
- f. Grant funds will be used to provide coordination for initiating the projects and improvement of staff, facilities and training; at the end of the grant period, existing agencies and infrastructure will be sufficiently strengthened so as to be self-supporting.

3. Funding.

Whereas outside funding and staffing will be necessary to begin each program the plan will lead to self-support and self-sufficiency. That means that health workers will be able to live on income derived from the people they serve; the program will ultimately draw on GOE resources for referral services, supplies, salaries and other needed support. The strategy for accomplishing this is out-lined below.

The budget is divided into two major sections: I. Coordination/Supervision; and II. Community Health Projects. None of the coordination/supervision in Section I. which USAID/Ecuador will pay for will apply directly to the five community health projects. With the

training and up-grading provided by grant funds, the PVO's and GOE's involved at the community level will have the personnel, facilities, and experience necessary to continue supporting the local health projects on their own after the USAID/Ecuador support is withdrawn.

On the community health project level, the main costs for continuing the community health programs beyond the grant period will be: health workers training and materials, supervision, medical supplies and salaries of supervisors and training instructors. The support for these local programs will move through three phases.

In the first phase, funding will be provided jointly by grant funds, existing PVO operations and personnel, the GOE, and the communities involved. During this phase grant funds will be used for up-grading facilities, preparing curriculums and consulting services.

In the second phase at the end of the grant period, the PVO's, GOE and the communities will bear the full costs for continuing the community programs. The existing PVO staff and GOE resources will have been up-graded, training programs will have been established and supported by the PVO's with resources provided by the grant. Thus, during this phase it is expected that the PVO's will no longer need grant support for training, etc. As more rural aides trained by the GOE are available, these government personnel will assume more of the training and supervision of the health workers. Although small consulting fees charged by the health worker and though a small percentage charge above costs for medicines, the operational costs for the health worker will be covered. (This policy is in effect from the beginning of the projects.) In addition the health workers will derive income from their forms since they are serving as part-time health workers. In all instances, only referral services are used, thus there will be no need for maintenance of these capital intensive services. Fees for referral services will in all cases be borne by the patients.

The third phase will occur as the GOE expands its health services over time, gradually replacing the PVO services in training and supervision. This of necessity will be a gradual process as GOE resources become available. The PVO's involved have been helping the GOE "fill in the gaps" for many years now, and their raison d'etre would confirm their doing so until that time when the GOE will be able to assume the major responsibility for the health needs of the rural poor.

Household Survey of Morona Santiago - 1977

Parasites. Lab test indicate that:

- 88% of those tested have some intestinal parasite.
- 70% of those tested have ascaris parasites.
- 50% of those tested have tricocefalos parasites.
- 13% of those tested have anquilostoma parasites.
- 46% of those tested have two parasites.

Present illness. Respondents were asked, "Are you sick now?" If yes, "What sickness?" Responses to this question indicated that:

63% of the population were sick at the time of the survey.

23% of the population suffered from amoeba*. Symptomatic indications were confirmed by lab tests.

18% of the population had upper respiratory symptoms. Only one case (less than 1%) of TB was confirmed.

14% of the population had fevers. Less than half of those (7%) ... diagnosed as malaria.

Other disorders included infrequent cases of anemia (3%), vitamin deficiency (1%) and injuries (4%).

When asked, "What was the cause of the sickness?" 42% of those who answered said, "contagion".

Following the survey, a small group of Shuar informants were asked to help amplify the many references to contagion that arose out of the survey interviews. They described many cultural beliefs and practices that supported the notion that the Shuar indeed understand the concept of contagion.

1. People will avoid sitting where a stranger has just sat. They may turn a stool over or put a clean banana leaf on a stool just used by a stranger.
2. When a person has vomited or defecated, especially where blood is evident, others will walk around the excrement and avoid it.
3. They may destroy plates and utensils that have been used by someone who is sick.
4. People will plug their nose when passing a watery or bloody stool thinking they might contract the illness through smell.

*The doctor who helped design the survey instrument categorized amoeba separately from parasitic infections.

5. When a stranger comes, the host family may not sit near him; when he leaves they may wash the place where he sat or slept with hot water. They may even throw the bedmat away.

Discussion

There was considerable agreement between the information collected informally in community meetings -- the community's perceptions -- and the empirical data collected in the household survey -- the health professional's perceptions.

Stomach Problems. The people complained of many stomach problems. The survey identified a very high prevalence of ascaris parasites and amoeba, both of which can cause severe "stomach" (intestinal) symptoms. The likelihood is that the majority of those infected could be considered acute.

Upper respiratory problems. The people complained of upper respiratory problems. The survey confirmed a high prevalence of upper respiratory infection. The endeavor to diagnose those symptoms did not produce clear conclusions. TB was not found to be as prevalent as expected. It was noted that parasites could be linked to some URI in that a number of instances were cited when people coughed up worms. Furthermore, parasites are known to migrate through the lungs as part of their life cycle.

Fever. Fever was found to be less prevalent than was expected. Malaria accounts for slightly less than half the fever symptoms. It was observed by medical staff reviewing the raw data that acute cases of parasites and amoeba can cause a fever.

Contagion. The Shuar already have a concept of contagion from their cultural beliefs and practices. In some specifics their concept may not be supported by western scientific knowledge (e.g. contagion through smell). Nevertheless, they understand that disease can be communicated from one person to another through a medium which is to be avoided. This provides an excellent conceptual foundation on which to build community health education.

Programmatic Implications.

The findings from both the community meetings and the household survey were discussed in a series of meetings attended by members of the Health Commission of the Shuar Association of Cooperatives and expatriate health professionals participating in the program. Out of those discussions grew an agreement about the specific thrust of the health program for the next year.

Intestinal infections. The single, most critical health need among the population of Shuar Indians relates to intestinal disorders caused by parasites, predominantly ascaris and tricocefalos, and amoeba. The following specific actions are recommended.

1. Help the people learn to improve the cleanliness of their houses and yards with special emphasis on the safe disposal of feces. Search the literature for alternative methods of waste disposal from which the Shuar may select the method (or methods) which are appropriate to promote within

their cultural and environmental constraints.

Help the people to expand their concept of contagion so as to provide the motivation needed for the adoption of health promoting waste disposal. Help them learn that animal waste, like human waste, can also communicate disease.

2. Test community water supplies for contamination. If (where) they are found to be contaminated, help the people of the affected communities to modify their practices such that they will draw uncontaminated water for household use.

3. Test chicha for contamination. If it is found to be contaminated, inquire further to identify the source of contamination. Discuss the issue with community members so they will adopt methods of chicha making which will avoid contamination.

4. Emphasize in the training and supervision of health volunteers their roles in relation to parasitic and amoebic infections: i.e. community education, diagnosis and treatment. Be sure adequate supplies of appropriate medications are available.

Upper respiratory infections. It is possible that some of the upper respiratory complaints are related to intestinal infections. Therefore, if intestinal infections are reduced some upper respiratory complaints may be reduced also.

Medical staff of the Shell hospital should do further research to diagnose the major cause of URI in order to make sound decisions about appropriate efforts to reduce its prevalence.

Fever. Nearly half the fever complaints were diagnosed as malaria. Training of Health Volunteers should re-emphasize the recognition, treatment and prevention of malaria. Since malaria is not endemic, the training should also stress the avoidance of indiscriminate distribution of malaria medicines.

Some fevers may be related to the highly prevalent intestinal disorders. If intestinal infections can be reduced the number of fever complaints will likely be reduced also.

Medical staff at the Shell hospital may wish to do further research to diagnose the fevers which are not related to malaria or intestinal infections. Data would suggest, however, that only 7% of the population suffer from non-malarial fever. If some of those are caused by intestinal infection, relatively few people are afflicted by yet-unidentified fevers. Fever research should take a lower priority than URI research or testing water.

Program Design

The following Program Design Frames outline the revised health systems designed for and with the Shuar population of the Oriente in Ecuador. The blue forms relate specifically to the training, deployment and continuing education (supervision) of health volunteers. Whereas the system includes

content and skills above and beyond the implications highlighted in the health assessment, it is to be understood that the issues dealing with the above programmatic implications will be given special emphasis.

APPENDIX C

Direct Costs

	78-79	79-80	80-81	81-82	Oct-Dec 82	Total \$
Salaries	505	8,358	12,509	5,272	208	26,852
Training	3,472	11,249	3,958	2,577	5,535	26,791
Curriculum	826	1,848	4,555	6,136	6,204	19,569
Supplies	4,268	5,293	2,243	1,306	81	13,191
TRAVEL						
Supervision	3,348	6,088	5,382	3,330	980	19,128
Alumni	1,506	2,651	2,321	1,065	191	7,734
Reporting	141	502	752	1,166	30	2,591
Other	958	1,479	764	992	1,254	5,447
Per Diem	807	622	579	961	288	3,257
Office	664	936	419	268	299	2,586
Vehicle/Maint.	1,489	4,684	3,669	7,002	2,661	19,505
Equipment	5,987	7,018	3,574	1,408	856	18,843
Capitol Costs	26,809	-	-	10,390	12,867	50,066
Administrative	4,693	2,673	4,265	3,512		15,143
Consultants	233	2,685	1,881	1,128	4,100	10,027
Misc.	149	(32)	1,966	1,089	99	3,271
TOTAL	55,855	56,054	48,837	47,602	35,653	244,001

APPENDIX D

Approximation of In-Kind Contributions

	78-79	79-80	80-81	81-82	Oct-Dec 82	Total \$
<u>Personnel Months</u>	<u>84</u>	<u>85.5</u>	<u>106.5</u>	<u>99</u>	<u>29</u>	<u>404 mo.</u>
Salary	52,000	53,000	66,000	61,300	18,000	250,300
Housing	17,300	17,600	21,900	20,400	6,000	83,200
Orientation	8,200	2,300	2,300	2,300	-	15,100
Int. Travel	650	1,300	1,300	1,300	650	5,200
Overhead	2,436	2,480	3,089	2,871	841	11,717
Transportation						
* MAF	414	658	605	575	327	2,579
** TSM	-	395	552	606	228	1,781
*** Radios	300	300	300	300	75	1,275
Goodwill	70,000	70,000	70,000	70,000	17,500	297,500
Total	151,300	148,033	166,046	159,652	43,621	668,652

*MAF - Mission Aviation Fellowship - reduced cost of project

**TSM - Technical Support Mission - reduced labor cost

***Service and maintenance cost contributed by HCJB

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Survey of Promoters' Diagnoses in Morona Santiago

In a review of 511 promotor-patient encounters during three months of 1982, it was found that correct or adequate treatment of the problem was administered in 86% of the cases.

A frequent objection to the use of medications by health promoters has been the possibility of misuse. In this study, only two encounters involved the use of medicines that were potentially injurious. In both instances, the case was that of using tetracyclines in women of child-bearing age. In neither case was it actually established that the patient actually was pregnant, but given the Shuar tendency to report pregnancy rather late, the promoters have been taught that it would be preferable to use an alternative antibiotic for bacterial infections in the face of even potential pregnancy.

A further 7% of the treatments were considered to be inadequate, meaning the choice of the medication was appropriate but the dosage or length of treatment did not reach the levels that had been taught. The use of antibiotics that were not necessary appeared in 3% of the cases and 3.5% of the cases showed treatments apparently unrelated to the diagnosis i.e. calcium for general aches and pains.

It might be argued - and is, even by many in Ecuador, that the above figures still represent too great a risk. That perhaps would be true in a city like Quito where an alternative system of medicine exists with less tendency to iatrogenic error. However, the project area is isolated from any form of medical care except for a very rudimentary system of herbs. The major form of existing health care structure is based on witchcraft - the major role of the health provider then being to decide just who the offending witch was and "sucking" out the stone or stick that had been spiritually placed in the ill person's body.

In this type of village, the minor risk of misuse of drugs seems amply justified in the face of large numbers of parasitic and infectious diseases that yield fairly readily to the simple use of a small number of drugs.

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