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AID's EXPERIENCE WITH HEALTH PROJECTS

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INTRODUCTION

In AID's Blueprint for Development, one of the five major development problems listed for Agency focus is Disease and Early Death. The Blueprint sets some quantitative targets for achieving better health in the developing nations by the year 2000;

- Reduce infant mortality to less than 75/1000 live births;
- Reduce child mortality (ages 1-4) to less than 10/1000;
- Increase life expectancy at birth for the population as whole to 60 years or more [1].

An analysis of trends in these health indicators reveal the significant progress made in most of the developing world during the last 15 years [2]. For 75 AID recipient countries analyzed, average infant mortality declined from 132 deaths per 1000 live births in 1970 to 114 in 1980 and to 98 in 1985. Life expectancy at birth in the AID recipient countries increased significantly, from 48 years in 1970 to 53 years in 1980 and 56 years in 1985. Tables 1 and 2 show trends in health indicators by region. Tables 3 and 4 assess the number of countries in each region likely to achieve the AID Blueprint health targets, assuming continuance of past trends into the future. 28 of the 75 AID recipient countries had already achieved the target of 60 years life expectancy by 1985 and an additional 13 countries are likely to achieve the target by the year 2000 if progress during the next 15 years is similar to actual progress achieved during 1970-1985. The remaining 34 AID recipient countries are unlikely to achieve the life expectancy target of 60 years by the year 2000, if future progress is similar to past trends.

Table 1: Trends in Life Expecancy in AID Recipient Countries
By Major Regions

	LIFE EXPECTANCY AT BIRTH IN YEARS			PROGESS ACHIEVED TOTALS		ANNUALIZED	
	1970	1980	1985	1970-80	1980-85	1970-85	1980-85
TOTAL REGION:							
AFRICA (NON-SHAEL)	46.6	49.0	51.9	2.4	2.9	0.2	0.6
AFRICA (SAHEL)	41.0	44.9	46.4	3.9	1.5	0.4	0.3
TOTAL AFRICA	44.5	47.9	50.8	3.4	2.9	0.3	0.6
ASIA	47.9	53.2	55.6	5.2	2.4	0.5	0.5
NEAR EAST	54.9	59.6	61.4	4.7	1.8	0.5	0.4
LAC	54.9	58.0	59.9	3.1	1.9	0.3	0.4
GRAND TOTAL	48.1	53.2	5.60	5.0	2.4	0.5	0.5

Table 2: Trends in Infant Mortality Rates in AID Recipient Countries
By Major Regions

	INFANT MORTALITY Per 1000 LIVE BIRTHS			PROGESS ACHIEVED TOTALS		ANNUALIZED	
	1970	1980	1985	1970-80	1980-85	1970-85	1980-85
TOTAL REGION:							
AFRICA (NON-SHAEL)	130.1	111.5	100.4	18.6	11.1	1.9	2.2
AFRICA (SAHEL)	163.1	147.9	138.0	15.2	9.9	1.5	2.0
TOTAL AFRICA	142.7	121.8	108.1	20.8	13.8	2.1	2.8
ASIA	132.6	115.7	99.6	16.2	16.2	1.7	3.2
NEAR EAST	125.7	108.0	81.7	26.4	26.4	1.8	5.3
LAC	105.2	80.2	72.0	8.2	8.2	2.5	1.6
GRAND TOTAL	132.3	114.2	97.8	18.0	16.4	1.8	3.3

Table 3: Number of AID Recipient Countries by Likeihood of Achieving the Life Expectancy Target of 60 years or more.

REGION	NUMBER OF COUNTRIES			
	ALREADY ACHIEVED BY 1985	LIKELY TO ACHIEVE BY BY 2000	UNLIKELY TO ACHIEVE BY 2000	TOTAL
AFRICA (SAHEL)	1	0	9	10
AFRICA (NON-SAHEL)	5	6	17	28
ASIA	4	3	5	12
NEAR EAST	10	2	2	10
LAC	6	1	1	15
TOTAL	28	13	34	75

Table 4: Number of AID Recipient Countries by Likeihood of Achieving the Infant Mortality Rate Reduction Target to 75/1000 or Less

REGION	NUMBER OF COUNTRIES			
	ALREADY ACHIEVED BY 1985	LIKELY TO ACHIEVE BY BY 2000	UNLIKELY TO ACHIEVE BY 2000	TOTAl
AFRICA (SAHEL)	1	0	9	10
AFRICA (NON-SAHEL)	6	13	9	28
ASIA	4	2	6	12
NEAR EAST	6	1	3	10
LAC	11	2	2	15
TOTAL	28	18	29	75

Analysis of infant mortality trends provide similar results; 28 of the AID recipient countries had already achieved an infant mortality rate of 75/1000 live births or less by 1985. Another 18 countries were likely to achieve this target by the year 2000, while the remaining 29 countries were unlikely to achieve it by the year 2000. Availability of child mortality data were not sufficient to enable analysis of progress.

From this analysis, it appears the worst health situation is found in the Sahel, followed by the rest of Africa and Asia. Health conditions are relatively good in the Latin American and Caribbean regions and in the Near East.

Past progress achieved and future improvements in health conditions are the result of collective efforts of the host countries and all donors. As the AID Blueprint acknowledges, "AID is only one small part of the development process."[3] Nevertheless, AID has played a significant role, and the purpose of this paper is to examine this role in more detail.

The report begins by providing an overview of AID's health policies and program trends, including a summary of health expenditure allocations in recent years. The remainder of the report reviews AID's experience with health projects by major approaches emphasized by the Agency since the 1970's including:

- o primary health care delivery
- o disease control
- o potable water supply and sanitation
- o other approaches

The review of experience emphasizes findings regarding project performance in attaining output targets, service access and utilization, health status impacts, cost-effectiveness, and longer-term sustainability and replicability. The review also examines important factors, such as the "four pillars," that bear on project success.

The experience review draws heavily on project impact evaluations conducted by AID's Center for Development Information and Evaluation (CDIE) during the 1980s, although other selected AID evaluations and studies are utilized to supplement the CDIE publications.

(A) OVERVIEW OF AID's HEALTH POLICY AND PROGRAM TRENDS

AID's health policy is based on directives from Congress contained in the 1974 amendments to the Foreign Assistance Act, which emphasized:

- the design and implementation of basic health care delivery systems
- selective disease prevention and control
- adequate drinking water and sanitation
- health planning and research

AID's first policy paper which was developed in 1980 reflected these four major components or approaches. A major emphasis was placed upon supporting primary health care (PHC) systems that emphasized community-based, low cost and integrated services. In 1982 the health policy paper was revised to reflect experience gained with PHC and emphasized:

- increasing the cost-effectiveness of health programs through improved design, management and implementation
- promoting self-financing, sustainable health programs
- increasing biomedical research and field testing.

The policy paper also emphasized the relationship between health programs and the Agency's Four Pillars:

- Health policy dialogues should encourage governments to adopt cost-recovery schemes rather than a 'free care for all' policy
- Private enterprise should be encouraged by (a) retraining existing private rural practitioners to provide PHC services; (b) using private logistics and distribution channels; (c) requiring private contributions (fees) for services and (d) encouraging private drug manufacturers and other enterprise ventures.
- Institutional development of nursing and medical schools and indigenous health groups should be supported.
- Research, testing and adaptation of important health technologies should be supported.[4]

Recently, the Agency's efforts to develop a Child Survival Strategy have placed increased emphasis upon two key technologies ... oral rehydration therapy (ORT) for diarrhea disease in children and immunization against major childhood diseases. An Immunization Strategy was released in January 1986 emphasizing vaccinations of

children, development of institutional capacity, and research on vaccine development and service delivery technologies. An ORT Strategy guidance is being prepared which will encourage support for national ORT programs, mass communications, related nutrition and hygiene interventions and research. Again, emphasis will be on use of community-level systems and the private sector for promotion and distribution and on ensuring financial sustainability.[5]

A separate policy paper was prepared in May 1982 on Domestic Water and Sanitation.[6] The policy states that AID's investment in improved water and sanitation should be based upon the following criteria:

- evidence of need and consumers' willingess to contribute to system investment and recurrent costs.
- the local or national institutional capacity to effectively construct, expand, operate and maintain the improved water and sanitation systems.
- transportation and communications infrastructure sufficiently developed to permit necessary supervision and support of local systems.

Factors guiding the design of AID-supported water and sanitation projects include:

- a minimum of 20-40 liters of relatively safe water per capita per day
- selection of a technology that can be maintained and operated easily and is acceptable within the local culture
- determination of community need and encouragement of active community involvement in all phases of the project
- sustained educational efforts to instruct users in proper water use and hygiene
- training of community level workers and of regional and national level personnel in the maintenance, operation, repair and administration/management of water supply and sanitation systems
- promoting opportunities for private sector involvement in the manufacture, construction, operation and maintenance of the systems.

primary health care systems. Simultaneously, AID funds continued to support special disease control programs, potable water and sanitation systems, and health research, health education, and health policy and planning projects.

Experience with the early PHC programs led to shifting emphases by the early 1980s. Although the PHC programs were in theory supposed to be low-cost, their rapid expansion and comprehensive services soon led to serious system "overload" and recurrent cost problems in many LDCs. Emphasis shifted to PHC approaches that would help recover or lower costs, such as charging fees-for-services, promoting insurance schemes, relying on volunteerism or use of existing private rural practitioners as a lower-cost alternative to salaried workers. The comprehensive services approach gave way to more selected interventions for which there was proven effectiveness.

The child survival strategy of the mid-1980s will more than ever focus health funds upon special approaches, especially upon the two technologies of ORT and immunization against childhood communicable diseases (diarrhea disease, measles, polio, tentanus, etc). AID support also continues for general primary health care systems (especially planning and management support), control of vector-borne diseases (such as malaria, onchoceriasis, schistosomiasis and trypanosmiasis), health and nutrition education, biomedical research, and domestic water and sanitation.

Another visible trend is the increasing use of PVOs and private sector institutions as the health project implementing agencies, as opposed to public sector agencies which were most typical in the 1970s.[7]

Table 7 shows trends in AID health project obligations by sub-categories during the 1980s. Water supply and sanitation projects (mostly ESF funded projects in the Near East) account for nearly one half of total health obligations during FY 80-85. Health delivery services recieved the second largest share of 28%, and disease control services and research received the third largest share of 13%.

Table 8 gives the number of active health projects with obligations during FY 80-85 by sub-category and account source. Of a total of 291 health projects, 115 are health delivery services projects, 43 are health planning and policy projects, 42 are water and sanitation projects, 39 are US institutions (PVOs) projects, 34 are disease control services and research, 10 are health education and 8 are not classified. 253 (87%) of the 291 health projects are funded by the DA account, 26 projects are funded by ESF and 12 projects are funded by the Sahel account.

(C) Country Allocations

Fifty five developing countries received AID health assistance during FY 80-84. Egypt has been the largest beneficiary of AID's

Table 5

Trends in A.I.D. Health Project Obligations
By Funding Account, FY80-85 (US$ Thousands)

	FY80	FY81	FY82	FY83	FY84	FY85	Total	Annual Average
Development Assistance								
Total Health in Development Assistance	129949	143336	134431	139536	128195	252313	927760	154627
% of Total D.A.	0.11	0.12	0.10	0.10	0.09	0.15	0.11	
Economic Support Fund								
Total Health in ESF	51965	144835	55275	213163	222739	232000	919977	153330
% of Total ESF	0.02	0.07	0.02	0.07	0.07	0.04	0.05	
Sahel								
Total Health in Sahel Program	6037	6012	8003	6000	11344	18095	55491	9249
% of Total Sahel	0.08	0.06	0.09	0.07	0.11	0.17	0.10	
Child Survival Fund								
Total CSF	0	0	0	0	0	25000	25000	4167
Total Health Obligations	187951	294183	197709	358699	362278	527408	1928228	321371

Table 6

Trends in A.I.D. Health Project Obligations, FY80-85
By Region (US$ Thousands)

	FY80	FY81	FY82	FY83	FY84	FY85	Total	Annual Average
Africa Bureau								
Total Health Obligations	39388	55395	51874	37032	38413	68191	290293	48382
% Bureau Obligations	0.1	0.12	0.08	0.06	0.06	0.09	0.08	
ANE Bureau								
Total Health Obligations	92778	196751	87874	253382	259778	282666	1173229	195038
% Bureau Obligations	0.04	0.08	0.03	0.1	0.09	0.07	0.07	
LAC Bureau								
Total Health Obligations	35262	19419	27177	35733	27120	79093	223804	37301
% Bureau Obligations	0.13	0.05	0.04	0.04	0.04	0.05	0.05	
Central Bureaus								
Total Health Obligations	20523	22618	30784	32552	36967	97458	240902	40150
% Bureau Obligations	0.07	0.07	0.09	0.09	0.1	0.17	0.11	
Total Aid								
Total Health Obligations	187951	294183	197709	358699	362278	527408	1928228	320871
% All Agency Obligations	0.05	0.08	0.05	0.08	0.08	0.07	0.07	

Table 7 Trends in A.I.D. Health Project Obligations
By Sub-Catagory, FY80-85 (US$ Thousands)

	Func. Subcat.	'1980 Actual	'1981 Actual	'1982 Actual	'1983 Actual	'1984 Actual	'1985 Actual	Total	Annual Average
Health									
Planning/Policy	HEPP	4844	8099	13900	7659	10065	20918	65485	10914
% Total Health Obligations		0.03	0.03	0.07	0.02	0.03	0.04	0.03	
Health Delivery Services	HEDH	86293	80672	81905	90037	69288	136780	544975	90829
% Total Health Obligations		0.46	0.27	0.41	0.25	0.19	0.26	0.28	
Water Supply and Sanitation	HEWS	75764	141011	70347	201316	226352	222226	937016	156169
% Total Health Obligations		0.4	0.48	0.36	0.56	0.62	0.42	0.49	
Disease Control Services	HECS	8601	46299	10787	36655	22884	32387	157613	26269
% Total Health Obligations		0.05	0.16	0.05	0.1	0.06	0.06	0.08	
Disease Control-Research	HECR	8839	12044	14370	13243	15225	31802	95523	15921
% Total Health Obligations		0.05	0.04	0.07	0.04	0.04	0.06	0.05	
Health Education	HEEH	900	2158	1602	5318	6324	14135	30437	5073
% Total Health Obligations		0.01	0.01	0.01	0.02	0.02	0.03	0.02	
U.S. Institutions(PVOS)	HEPV	2710	3900	4798	4471	8488	27738	52105	8684
% Total Health Obligations		0.01	0.01	0.02	0.01	0.02	0.05	0.03	
Not Classified	HEZZ	0	0	0	0	3652	13422	17074	2846
% Total Health Obligations		0	0	0	0	0.01	0.03	0.01	
Child Survival Fund	CSXX	0	0	0	0	0	28000	28000	4667
% Total Health Obligations		0	0	0	0	0	0.05	0.01	
Total Health Obligations		187951	294183	197709	358699	362278	527408	1928228	321371

Table 8: Number of Health Projects with FY 1980-85 Obligations
By Subcategory and Funding Account

Subcategory	DA/HE	ESF	SAHEL	TOTAL
Planning & Policy	42	13	1	43
Health Delivery Services	93	9	9	115
Water Supply & Sanitation	31	2	2	42
Disease Control Services	16	1		18
Disease Control Research	15	1		16
Health Education	9			10
US Institutions (PVOs)	39			39
Not Classified	8			8
Total	253	26	12	291

health assistance, receiving $702 million about 45% of total AID health obligations during FY 80-84. Other countries with large AID health programs (FY 80-84 obligations over $25 million) include Pakistan, the Philippines, Honduras, Jordan, Indonesia, the Yemen, Sri Lanka, India and Tanzania.

On a per capita basis, the greatest AID health assistance went to Swaziland, Oman, Jordan, Egypt, Honduras, Botswana, Lesotho, the Yemen, Cape Verde and El Salvador. These countries received FY 80-84 AID health obligations totaling more than $ 5 per capita.

EVALUATION FINDINGS: THE PERFORMANCE OF PHC PROJECTS [8]

This section synthesizes some of the major findings of the performance of several PHC projects recently evaluated by CDIE and also draws on a 1982 review of 52 PHC projects by the American Public Health Association (APHA). Performance of projects is examined in terms of the objectives of achieving output targets, expanding population access and utilization of PHC services, improving health status, cost-effectiveness and achieving long-term sustainability. The report examines critical factors for successful project performance, including favorable policy environment, institutional development, financial viability, use of appropriate technologies and private sector mechanisms.

(A) Output targets: The AID primary health care projects reviewed generally had few problems in meeting the quantitative output targets planned for in the project design. Primary health care units were built in rural areas, often with the active voluntary participation of the villagers. Paramedical cadres were selected, trained and placed in rural locations as planned.

(B) Access and Utilization: The paramedicals operating in rural areas almost by definition made significant differences in the access villagers had to basic medical services. However, often the coverage of the population was not as great as anticipated in the designs. Inadequate transportation often limited the number of households a paramedical could serve. Motivation and adequate renumeration for these health workers was also important; volunteerism did not appear to work, nor were profits from medicine sales enough compensation without a basic salary.

Demand and utilization of the paramedicals' services were affected by many factors; most importantly, whether they were able to provide basic curative services, such as common drugs and emergency first aid. Without this capability the health workers were limited to the role of "educator" which villagers tended to perceive as "useless". Curative services of paramedicals were constrained in several projects by inadequacies in drug resupplies, caused by lack of finances and poor logistics management. In some cases the curative practices of paramedicals were constrained by the country's medical

laws or by oppostion of the medical establishment. Relative differences in fees for services between the paramedical's services and alternative medical services also affected utilization. Furthermore, the sex of the paramedicals and cultural traditions frequently affected who would utilize their services and for what different health problems.

Information on target population coverage and utilization of PHC services have not always been readily available, due to inadequacies in the project health information systems. Often information systems are too sophisticated and overburdened with too much data collection to be readily useful.

Findings on PHC coverage and utilization in the CDIE evalutions are summarized below:

- Korea/Health Demonstration Project: Between 1976 and 1979 the utilization of health services in the three demonstration areas increased by 86%, compared to a 47% increase in control areas. However, utilization dropped significantly after 1979 as the policy environment changed.

- Senegal/Sine Soloum: Between 1977 and 1984 villagers in 370 villages had access to PHC services. Records on client utilization were not adequately maintained, however, due to illiteracy of many of the health workers. The evaluation noted that utilization by men was higher than by women, who tended to prefer traditional, female practitioners, especially for certain health problems.

- Colombia/Promotora Program: A 1981 survey of the differences between villages in Huila receiving PHC services and those without indicated positive impacts of the program in increasing health service utilization, especially immunization, and increasing preventive care practices.

The 1982 APHA assessment of 52 PHC projects found substantial evidence of increased utilization and coverage of target populations attributable to a number of the health projects reviewed.

- Thailand/Lampang. During the project period 1974-1979 there were increases in the use of all health services, and a clear shift towards utilization of rural health facilities and village based providers. Use of child's and women's health services increased more in project areas than in control areas. Immunization of children increased by 12%

in some project areas and decreased by 10% in other areas, compared to control areas where decreases in coverage ranged from 6% to 20%. Health care coverage increased from 20% to 70%-80% of the population during the project life.

- Bolivia/Montero. This project reported four times as many patient visits in the project areas as in other areas. A vaccination campaign in the project area was 200% more effective than an earlier, pre-project campaign. It is estimated that the project increased health service coverage from a small percentage to 44% of the target population.

- El Salvador/RHA. The 1979 evaluation noted greater use of rural health facilities as a result of rural health aides' home visits and referrals in the project areas compared to other sites.

- Honduras/Integrated and Thailand/20 Province projects reported increased use of rural health facilities.

- Kenya/Kitui. DPT and polio immunization coverage rates of 90% - 100% were reported.

- Dominican Republic/Health Sector. During the 1977-1978 period vaccinations of children against measles increased from 15% to 47% and vaccinations of women of childbearing age against tetanus increased from 21% to 56%. Couples' use of contraceptives increased from 8% to 14%. It is estimated that the population with access to health services increased from 21% to 56%.

- Niger/Diffa. A 1980 evaluation estimated that the project's village health workers increased coverage of the target population from 5% to 15%.

(C) Health and Nutrition Status Impact: Measuring the impact of PHC projects upon the health and nutrition status of the population is a complicated, and often expensive task, requiring baseline-follow-up sample surveys of those receiving project services and of control groups. Many planned survey efforts have been abandoned as too costly, lengthy and complicated, whereas others that have been completed have failed to prove any health or nutrition improvements attributable to the PHC projects, because of the complexity of environmental factors affecting health and nutrition status,

diversity of PHC project approaches and integrated components, short time frames for impacts to take effect, and shortcomings in the data collection techniques.

CDIE evaluations typically rely on secondary data sources because of resource and time constraints. Any attempts at primary data collection are restricted to retrospecitve data, and thus must rely upon perceptions of health changes rather than measures of actual change, or upon comparisons of beneficiaries' and control groups' health status at one point in time only.

- Colombia/Promotora Program. The CDIE evaluation team undertook a small household survey of beneficiary and control groups, but were unable to measure any differences in health or nutrition status indicators that could be attributed to the program.

- Senegal/Sine Saloum. There was no evidence of health status impact because planned baseline surveys had not been implemented.

- Korea/Health Demonstration Project. A 1980 survey by the CDIE team of villagers, health providers and government officials in the demonstration and control areas indicated that all perceived health status to have improved during the late 1970s. However, they attributed this increase to rising incomes, better nutrition and better education. The importance of improved health care delivery was infrequently mentioned.

The 1982 APHA assessment of 52 AID Primary Health Care projects concluded that few had been in operation long enough to get impact data on health status, and that even where there was data on health improvements it was frequently not possible to attribute measurable changes to the PHC programs. Only 5 evaluations of health status were located in the projects reviewed.

- Egypt/SHDA. A 1980 applied reasearch study showed that in villages where Oralyte was distributed to homes or where mothers administered a rehydration fluid made from household ingredients, infant mortality was reduced by 40%, compared to control groups where deaths were reduced by 12%.

- Kenya/Kitui. Reductions in infant mortality are reported in a 1980 project review, although supportive data are not provided.

- Panama/RHDA. A survey conducted by the MOH in 1976 demonstrated that villages which built safe water supply and excreta disposal systems registered marked decreases in the incidence of diarrhea (67% reduction), parasites (65% decrease) and typhoid (64% decrease).

- Nepal/Integrated. The 1980 AID evaluation reported that the health status of the population has not improved significantly.

- Thailand/Lampang. The final project report (1981) noted little observable change in the health or nutritional status of the target population and concluded that the slight effects observed could not clearly be attributable to the project, although fertility rates decreased substantially.

(D) Cost-Effectiveness: Cost-effectiveness measures, such as the cost per infant or child death averted, are rarely available for AID assisted PHC projects. As noted above, the CDIE evaluations were not able to measure health impacts, so cost-effectiveness data were impossible to calculate. The APHA study of 72 PHC projects found no cost-effecticeness indicators, noting that "costs of programs are not calculated regularly as part of program evaluation." A review of PHC projects by Julia Walsh and Kenneth Warren found that costs per infant deaths averted ranged from $144 to $20,000, with a median of $700. However, they noted methodological problems with many of the studies and concluded that the only precise calculation was $144 per infant death averted in Narangwal, India.

A simpler measure of cost, calculations of annual recurrent costs on a per capita or a per service contact basis, are available in some cases. The CDIE evaluations found:

- the average annual cost per visit for the Korea health demonstration project was about $2.50 during the early years of the project, but increased to $3 as utilization dropped and economies of scale were lost.
- the average cost per beneficiary per year of the Colombia Promotora health project was $2.80

The APHA review found the following data on recurrent costs:

- the Dominican Republic health sector program cost an average annual $2.70 per capita.

- the Korea/KHDI project cost an average $2. per service contact during the early years of the project, but increased to $3 as utilization dropped and economies of scale were lost.

- the Afghanistan/BHS project cost an annual average of $0.50 per capita

- the Bolivia/Montero project cost an annual average of $15.40 per capita.

Another review of health projects by Walsh and Warren in Nigeria, Turkey, India and Guatemala found a wide range of estimated cost per capita which they attributed to the different services these programs provided to their communities and the different times over which they were initiation. In general, though, the cost per capita ranged from $0.40 to $7.50, or between 2 and 2% of the national per capita income of the particular country. 1%

This information base is not sufficient to support a comparison of costs for PHC programs and alternative health delivery systems. No information was available on the capital, or investment costs of the PHC projects. The World Bank estimated a 'model' PHC program to have capital costs of about $5 per capita, including building of health posts, training of community health workers, and provision of vehicles. It is significant to note that PHC projects appear to generate relatively high recurrent cost requirements in proportion to their capital or development costs. As will be discussed later, this has frequently strained government health budgets, and attempts to get communities to finance the health services has only been partially successful.

Some analysts, such as Jim Walsh and Kenneth Warren, have argued that cost-effectiveness of PHC projects can be improved through a selective approach that concentrates on the most cost-effective types of interventions. These interventions would aim at controlling diseases with high morbidity and mortality rates with feasible, low-cost control methods, such as measles and DPT vacinations for children, tetanus toxoid for women of childbearing age, encourgement of long term breast feeding, treatment of malaria fewer in children and ORT for children with diarrhea.

While the selective approach is appealing it should be ~~contained~~ cautioned that cost-effectiveness evidence for different interventions is still spotty and data found to hold in one or two locations cannot be generalized world-wide. Furthermore, even a low-cost program which is very effective in lowering mortality may still be beyond the means of government health ministry budgets. Generating revenues from communities may be the key to financial viability and successful expansion of PHC and other health programs, but there is no guarantee that communities will demand and perceive as high priority the same set of interventions as would be selected based on cost-effectiveness criteria alone. We now turn to this and other issues related to PHC program sustainability and replicability.

(E) Sustainability and Replicability: Achieving specific output, utilization, impact and cost-effectiveness objectives during project implementation is only a part of AID's goal. The longer-term sustainability of project services and benefits after AID funding is over is equally important. Without adequate policy support, institutional capacity, and financial self-sufficiency, programs will falter or fail without external donor support, and most certainly will not be replicable for more widespread adoption. The CDIE evaluations provided the following insights into sustainability and replicability:

Colombia/Promotora Program: The effectiveness of the Promotora program was limited by inadequacies in supervision, transportation, logistics support and a critical shortage in basic medical supplies. The shortage in the official source of medical supplies led in some cases to spontaneous and innovative fund-raising solutions by the community to purchase medicines. However, in areas where the promotoras lacked basic medicines and served only as 'educators' the communities perceived them as virtually 'useless'. The inadequacies in the support provided to promotoras was primarily a question of financial constraints. The public health system of Colombia was already running a large deficit in 1980, and the costs per beneficiary of $2.80 per year for the rural health system had proven much larger than planned. The evaluation team concluded that unless local financing approaches could be initiated to supplement the national funding, it was unlikely that the program could be replicated to cover the rural population in need of services, an it was doubtful whether adequate support would be forthcoming to increase the promotoras programs' effectiveness.

Korea/Health Demonstration Project: This PHC project demonstrates how a project that begins with promise can run into serious problems if government health policies are not appropriate. During 1976-1979 the project was relatively cost-effective at an average cost per visit of under $2. Community financing schemes were contributing substantially to covering costs. However, after 1979 the policy environment changed and seriously reduced the project's viability. Complaints by private physicians resulted in curtailment of the program paramedicals' curative duties, eroding demand for their services among the villagers. Also, a mandatory health insurance scheme reduced the fee differential between visits to the project paramedicals and private physicians, further reducing project service utilization. By the time of the CDIE evaluation in 1980, utilization had dropped to the point where economies of scale could no longer be realized. The cost per visit had increased to $3 and the system was no longer financially sustainable at current levels of support.

Senegal/Sine Saloum Project: Prior to 1980, the Sine Saloum rural health care project suffered from several fundamental weaknesses that jeopardized its viability. The program was too ambitious and had expanded at too rapid a pace. As a result, village health committees had not been properly trained for their management and financial responsibilities to their community health units. The units were not charging enough fees to cover operating costs. Moreover, supervision and support for the village health workers were inadequate as was the system for replenishing medicine supplies. A health policy of providing free health care services at the next higher (dispensary) level in nearby towns made it difficult to charge for services at the village level. A 1980 Evaluation pointed out these shortcomings and made recommendations that were seriously acted upon by the USAID and the Senegal Government. Project management and health worker supervision was strengthened. Training of the village health committees was intensified to keep simple financial accounts and handle drug reorders. The system of fees was overhauled. The Government reversed its policy and began charging fees for health services at all levels. As a result of these efforts, by the time of the last CDIE evaluation in 1984, the Sine Saloum project had managed to achieve a high degree of financial self-sufficiency through community level participation and contributions, holding promise as a model for future replication.

FACTORS AFFECTING PHC PROJECT PERFORMANCE AND SUSTAINABILITY: The CDIE evaluations and APHA review shed some light on major factors affecting PHC project performance, sustainability and replicability, and provide findings on what approaches work well or don't work well.

Financial Viability: While the recurrent costs of PHC programs are generally modest, usually ranging between $2 to $3 per capita per year, they have frequently been higher than anticipated in project designs. For every dollar spent on project development (e.g. investments in construction, training, etc.), typically 40¢ to 60¢ is spent on recurrent costs (e.g. salaries, medical supplies, transportation costs, maintenance, etc.). Most evaluations of "first generation" PHC programs funded completely by national government health budgets have found that higher than anticipated operating costs per beneficiary plus overambitious attempts to expand coverage have severely strained their total health budgets. Most agree that the goal of "health service availability for all" is an impossible objective in most countries unless local financing schemes can be establihed to partially support PHC program costs.

Yet making community financing schemes work has not been an easy task either. The 1982 APHA assessment reported that of 28 projects using community financing to compensate community health workers, none had found a completely satisfactory method. Financing of

medical resupplies has been more successful. The 1984 CDIE evaluation of the Senegal Sine Saloum project found the community financing scheme to be operating very successfully.

The synthesis of evaluation findings indicate that important ways to make local financing schemes work include:

- proper training of community health committees in their responsibilities for raising and managing of program funds. Training in basic financial accounting, logistics for drug resupply, user-fee approaches, etc. to local leaders, health committees and villages health workers was essential for successful community financing schemes.

- coordination with national health policies. Charging fees for village PHC services will be counter-productive and inequitable if services at other levels of the health system (e.g. dispensaries in urban areas or towns) are offered for free or if national insurance programs make it financially attractive to utilize private physicians in nearby towns.

- including high-demand curative services. Experience indicates that villagers tend to demand curative services and are willing to pay for them, but are far less interested in paying for preventive services.

Institutional Development: Equally important for long-term sustainability is the institutionalization of important PHC program operations and functions. At the level of the implementing agency, training in management, supervision,finances and logistics are equally important to training of staff in medical practices. At the community level, simply organizing health committees is not enough for sustained participation; training must be persistent, thorough and practical.

Choice among types of implementing agencies (government agencies, semi-autonomous agencies, PVOs, private sector institutions) must be selected depending upon the country environment and the project's objectives. PVOs tend to be very effective with smaller-scale, demonstration projects, especially those involving community participation and interaction. Ministries of Health or semi-autonomous agencies linked to government are usually involved in PHC systems of national scope. While semi-autonomous agencies tend to have more flexibility and operational autonomy than government bureaucracies, they may be at risk if they begin to be viewed by line ministries as competitive as, for example, happened

in Korea. Tying PHC programs to local government may be promising. In several instances, local village authorities have used community taxes or charged standard health service fees to help support health workers' salaries and medical resupply costs. The private sector may offer opportunities, as discussed below.

Private Sector Involvement: Evaluation findings have discussed private sector involvement in a number of contexts. First, there have been situations of conflict, eg, in Korea when new paramedical cadres were trained for curative as well as preventive services which may have hurt private medical practices or raised legal/ethical issues about appropriate roles of paramedicals.

Also of great interest are ways in which the private sector can be utilized to achieve PHC program objectives cost-effectively. Innovate experiments are going on around the world in:

- Retraining existing traditional rural practitioners to provide PHC services. Advantages include reducing duplication or competition with these established groups, their current acceptance and utilization by villagers, as well as cost considerations. Because these traditional practicioners have already proven self-sufficient 'businesses' they can usually undertake additional PHC services at a lower cost than would be necessary to hire new paraprofessionals.

- Using existing retail distribution systems to sell/ distribute oral rehydration salts and other medical innovations.

- Using private communications and advertising companies to design and implement mass communications compaigns aimed at education and behavior changes in health and nutrition practices.

Appropriate Technology: There are several facets to the issue of appropriate technology choices for PHC programs.

One is the issue of selection of technologies and delivery services that PHC systems should emphasize. Concern should obviously be for those that are most effective in eliminating major health problems, such as immunization, ORT, breastfeeding, hygiene and other preventive/ educative approaches. However, demand for services and the villagers' perceptions are also important, and their priorities are frequently curative approaches; basic drugs, and emergency aid. Including basic curative services as part of the paramedicals' role may be an important first step in order to gain villagers' trust before they will even listen to advice regarding preventive health practices. Also immediate, effective demand for curative services

can help get a user-fee system operating. While experience indicates that too comprehensive and integrated an approach to PHC services may 'overload' the system, too much preconceived selection may be equally damaging to a program's performance if taken out of the context of local actual and perceived needs and demands. There may be a trade-off between the most "cost-effective" interventions in terms of health impact, and those services which have the highest revenue-generating potential for the project.

Other technological issues relate to the 'soft' technologies of dissemination and marketing. A technique referred to as 'social marketing' has proven very succesful in changing behavior practices and encouraging purchase and use of socially desirable products, such as contraceptives and ORT. Social marketing may be particularly important in instances where a target population does not perceive the need for a particular health product or service and therefore will not use or pay for it. This technique relies heavily upon developing advertising/education campaigns using modern mass communications techniques and also upon using existing private retail distribution systems for marketing the products.

Policy Dialogue: A final factor shown in the evaluation reviews to be critical to successful project performance is the existence of a favorable health policy environment. The Korea Health Demonstration project illustrates how a project can be crippled if negative policies exist or are enacted. In that case, the Korean Government curtailed the curative health role of the project's paramedical workers and also instituted a national health insurance scheme that greatly reduced the demand for the paramedicals' services.

The Senegal Sine Saloum PHC Project is an excellent example of how AID plicy dialogue can achieve positive changes in government health policies that can revitalize a project. A 1980 CDIE evaluation pointed to the difficulty of trying to charge user fees for services at the village level when they could be obtained for free at the next higher (dispensary) level in nearby towns. The AID policy dialogue led the Senegalese Government to reverse its policy and to charge fees for health services at all levels. This decision greatly improved the ability to the PHC project to achieve a higher degree of financial self-sufficiency, as well as to improve the financial viability and equity of the whole health system.

The APHA review found instances of 14 PHC projects that had effected positive changes in government policies, including:

- sensetizing the government to the need to expand services to poor, rural areas
- improving health resource allocation with priority on servicing rural areas

- changing laws to permit non-physicians to provide curative care and dispense drugs
- enacting new legisation to permit governments to recover some of the cost of health services by changing user fees for drugs and services
- providing demonstration or model projects that have been expanded into national programs.

EVALUATION FINDINGS: THE PERFORMANCE OF VERTICAL DISEASE CONTROL PROJECTS

In contrast to "horizonal" primary health care projects that have provided integrated curative and preventive services aimed at diminishing a variety of health problems and diseases, "vertical" disease control projects have typically sought to prevent or control a single disease at a time.

Some of the major diseases that have been singled out for special efforts via vertical projects include:

- diarrhea disease in children through use of oral rehydration therapy (ORT)
- childhood communicable diseases (e.g. measles, polio, tentanus, etc.) through immunization.
- vector-borne diseases (e.g. malaria, onchroceriasis, schistosomiasis and trypanosmiasis) through aerial spraying and other technologies.

Project performance is examined in terms of objectives of achieving output targets, expanding population access and coverage, improving health status, cost-effectiveness and achieving long-term sustainability. Critical factors for successful project performance are examined, including favorable policy environment, institutional development, financial viability, use of appropriate technology and private sector mechanisms.

Sources of information for this section include a selection of vertical disease control project evaluations.

[SECTION TO BE DRAFTED]

EVALUATION FINDINGS: THE PERFORMANCE OF RURAL POTABLE WATER AND SANITATION PROJECTS

Potable water and sanitation projects have traditionally been included as health projects because a reported benefit of improved potable water supplies and sanitation facilities is a reduction in the incidence of water-borne diseases and thus an improvement in health.

This section synthesizes findings of the performance of several rural potable water projects evaluated by CDIE as well as other studies. Performance of the projects is examined in terms of achieving output targets, expanding population access and utilization of potable water supplies, improving health status and other beneficiary impacts, cost-effectiveness and achieving long-term sustainability. Factors important to project success are reviewed, including institutional development, financial viability, use of appropriate technology, and other factors.

(A) Outputs Targets: Few of the projects evaluated by CDIE had significant problems with the construction of potable water systems or in achieving planned targets on schedule. In fact, in two of the projects evaluated, Peru and Panama, targets were exceeded. Only in the Kenya project did the evaluation team note significant delays and cost overruns in building the rural water systems.

- In the Peru Village Water Supplies Project, a total of 29 water supply systems had been built and another 22 were under construction, compared to the project design target of only 20. They were built with the help of villagers in record time.

- In the Panama National Rural Water Program, by the time of the evaluation, 562 piped water systems were completed and another 83 were under construction which exceeded the original target of 500 because construction costs were less than anticipated.

- Kenya rural water systems programs suffered uniformly from delays, cost-overruns and other implementation programs. For example, the AID funded CARE project only completed 10 systems during the first year at twice the anticipated cost, compared to a target of 30.

Other components of the projects evaluated, were less successfully implemented. For example, the installation of sewer systems suffered implementation problems in Peru because of the inordinate amount of voluntary labor required to dig trenches and the relatively low priority of the activities from the villagers' perspective. Also, several projects, including Peru, Korea, Thailand and Tunisia,

encountered problems meeting health education component targets due to budget shortages, inter-agency discord and duplication of effort.

(B) Reliability of the Water Systems: While construction of the rural water systems was in general relatively easy to achieve, some countries such as Tunisia and Kenya were unable to ensure their continued reliability. Most countries evaluated, however, were able to achieve good records of system reliability and thus ensure the population's continued access to water benefits. The most persistent cause of unreliable water systems was inadequate operation and maintenance (O&M) support, both at the community and higher levels. A key factor in successful, reliable systems was the existence of community level water organizations who participated in the systems design, set fee structures and made collections, and made system repairs. Another factor was the existence of adequately managed and technically competent government agencies capable of providing back-up support and supervision for the rural water systems. A third factor affecting reliability was the appropriateness of the technology chosen to the physical environment and to the desires of the user community. For example, diesel systems almost universally displayed persistent operational and maintenance problems, including high fuel costs, frequent breakdowns and lack of foreign parts. Systems that were imposed upon communities, irrespective of their perceived water needs and willingness to pay, were frequently beset by O&M problems and unreliability.

Findings from CDIE evaluations regarding reliability of project water systems include:

- The Peru Village Water Supplies project achieved a good record of system reliability, with 27 out of 29 water systems operating satisfactorily at the time of evaluation. This success is attributed to use of the relatively simple, low cost and durable gravity systems and to the existence of effective village organizations that were able to collect funds to cover O&M costs.

- The Panama National Rural Water Program achieved more mixed success. Sixteen out of 26 rural water system visited by the evaluation team had good records of operation. Village organizations were able to collect fees and maintain the systems adequately. The remaining ten systems visited were still in the early "shakedown" period and were still experiencing problems such as bursting pipes, insufficient water flow in dry seasons and lack of funds to buy diesel fuel. The evaluation team noted that operational problems were often associated with communities' lack of organizational capacity. Choice of technology was also a factor, with the diesel systems having the greatest maintenance problems and rising fuel costs.

- The Thailand evaluation team visited 52 communities and found that only 7 were not functioning. Of the 45 functioning systems, 8 no longer provided chlorination.

- In Tunisia's Well and Spring Protection Project, 26 of the 31 sites visited needed repairs. Only about 8 of the sites visited provided "potable" water, the objective of the project. The communities involved did not place a great value in projects' provision of better quality water; their perceived need was for greater water quantities and convenience. Maintenance and disinfection of the wells was irregular and inadequate to ensure potability.

- In Kenya the evaluation team visited 23 rural water system sites and found only 10 to be reliable. There was an absense of institutional capacity, either at the community or governmental agency levels, equipped to operate and maintain the systems.

(C) Access and Utilization: Unreliable operation of water systems, we have seen, reduced access of some intended beneficiaries to improved water supplies. Other factors besides reliability have also affected access, for example, the selection criteria used to choose communities for water project sites. While typically design criteria included community need and willingness to participate, political influence was sometimes a factor that skewed the distribution to wealthier communities.

Within communities access could be limited by physical, technical, economic, and political factors. For example, houses dispersed far from the water source could frequently not be cost-effectively connected. In the case of gravity systems, houses on high ground could not be included. In a few cases, water access was mostly captured by elites and commercial ventures to the exclusion of the poor majority in the community. Policies, such as who paid for individual house connections, how water use fee structures were established, and whether public taps were made available, all affected whether the poorer members of a community shared in the access to new water systems. Examples of findings on water system access from the CDIE evaluations include:

- In the Peru project, two of the villages visited had all households connected to the new water system. In a third village, only one half of the houses were connected because some houses were too scattered and distant to make connections economically feasible. In yet another village, access was limited when scarce piping was diverted to run a special line to the house of one village authority.

- In the 26 communities visited in the Panama project evaluation, access to the piped water systems was almost

universal, except for a few who happened to live on high land and couldn't be served by the gravity systems.

- In Korea, only about one half of the 6 communities chosen for water systems were low income communities as intended. Access was restricted primarily to the 20% of community households that could afford the installation cost of individual connections, excluding the poor. Only in one site were low income families served, because the local coal mine paid for 211 connections.

- In Thailand approximately one half of the systems visited served 90-100% of the community through a combination of private connections and a few public taps. More and more people were installing private connections to the piped water systems. At the time of the evaluation an estimated 17% of rural population. These were served by piped water systems in contrast to only 3% prior to the project. Some poor persons in communities lost access to the project water when public taps were closed. This was part of a policy to achieve financial viability by eliminating public taps in favor of metered private connections.

- In Kenya, influential spokespersons often affected selection of communities. In addition to the problem of frequent system failures, access was limited by the policy of closing public taps in an effort to encourage private connections and achieve financial viability. According to the evaluation, this policy resulted in a dramatic drop in the population served and left a higly subsidized water system serving an elite minority.

- In Tunisia, the renovated well and springs were accessible to all in the community within walking distance from the site, except during the frequent pump breakdowns. At such times the inconvenience caused was great and there were instances of villagers breaking through the containments to get at the water source.

There are two aspects to utilization of the rural water systems that are of major importance; increased quantities of water used and improved quality of water for drinking. The project evaluations point to greater success in increasing quantity of water used, although there were also successes in achieving quality improvements. In general, villagers placed a far greater value on increased quantities of water, especially when conveniently delivered via connections directly in their house-holds. Quality improvements were less of a priority with villagers, and often their perceptions of "quality" water for drinking were at odds with

project standards for potability. Illustrations from CDIE evaluations of project performance in providing improved quantity and quality of water include:

- The Peru project provided sparkling clear and ordorless spring water piped directly to villagers' households, compared it to previous protected and untreated water sources. Also, the villagers reported using more water than before the project.

- Most villagers interviewed in the Panama project evaluation liked the water provided by the project and reported that it was clear, sweet and odorless.

- In Korea, two of the six systems visited had problems of water quality from the users' perspectives. While the sources were 'potable', problems with odor, organic content and chlorination 'taste' caused people to use other unprotected sources for drinking water.

- In Thailand, the evaluation team reported increased quantities of water being used by beneficiaries as well as improved potability. However, many people didn't like chlorinated water and used other sources for drinking water.

- The Tunisia project only aimed at increasing water quality. In the majority of the sites visited (75%), the water source was not free from contamination.

(D) Health and Nutrition Status Impacts: As with other AID health projects attempts to obtain statistically significant proof of the health or nutrition status improvements attributable to potable water and sanitation projects has been generally disappointing. Although many potable water projects had planned before-after evaluation studies of health impact, most efforts lacked statistical rigor. Furthermore, because of the numerous intervening variables affecting health and nutrition status in rural communities, even a sophisticated survey implemented by the US Bureau of the Census of a rural potable water project in the Philippines failed to find a statistically significant impact except among the higher income groups. Such findings are not surprising, given the prevailing conditions in most developing countries. The provision of clean water supplies alone may have little impact on disease unless similar improvements are made in personal and food hygiene, nutrition and other health services. In other words, improving water supply is a necessary but not sufficient condition for immediate health improvements.

Nevertheless, there is evidence of health impact. A recent WHO study found that improvements in water quality reduced morbidity due to diarrhoeal disease by 18%, improvements in water quantitiy reduced diarrhoeal morbidity by 25%, and improvements in both quality and quantity reduced diarrhoeal morbidity by 37%. Improved sanitation reduced diarrhoeal morbidity by 22%.

It is well documented that connections inside the house are necessary to encourage the hygienic use of water. For example, shigellen-caused diarrheas decrease 5% with outside house connections but fell 50% when sanitation and washing facilities were available within the home.

A special CDIE evaluation of the health impact of a piped water system in a Guatemala village found a statistically significant decrease in the incidence of diarrhea among all age groups except infants and those over 45 years old. Children in age groups 1 to 7 years were the major beneficiaries of reduced diarrhea.

The possible relationships between potable water systems and improved health and nutrition status are many. Unsafe and insufficient water results in numerous waterborne and sanitation--related diseases, particularly diarrhoeal disease and parasitic infections among infants and children. Greater quantities of water and convenience via household connections improve household hygiene. Time saved by women previously hauling water can be devoted to household chores, child care, tending gardens or livestock, and income earning activities, all of which in turn may increase health and nutrition status of the family. A potential negative health impact may occur when mid-sized communities of 5,000-10,000 increase substantially the quantities of water used, if there is no proper drainage. Only one CDIE evaluation, in Korea, actually observed problems of waste water run-off resulting from the project.

The CDIE impact evaluations of potable water typically relied upon non-statistical surveys, interviewing water system users and other community informants about their retrospective perceptions about health benefits. In this way, a wealth of anticodotal evidence has been gathered indicating that many users percieve health benefits resulting from reliable potable water systems, especially those that increase water quantity (via household connections) as well as water quality.

- In the evaluation of the Peru project, school teachers in every village visited reported that the water project made one of the biggest impacts on children, who came to school clearner and with less skin disease. Sixteen percent of the women interviewed said that the water supplies had improved the health of their families.

- In Panama, the evaluation team interviewed teachers who reported substantial reductions in absenteeism due to diarrhea after completion of the water projects. They noted a widespread belief among the villagers that good household water supplies brought improved health to the community.

- In Korea, the evaluation studied two communities in depth for health impacts. They found the impacts to be limited by the small percent (20%) of the community households connected to the system, and furthermore to the preference many had for well water for drinking. The greater quantities of water available to the connected households appeared to improve household sanitation, although the evaluation team noted that increasing use of flush toilets without proper waist disposal were creating a potential health hazard for the transmission of water borne diseases. The health education component of the project did not noticably change the health knowledge or practices of those interviewed.

- In Thailand, the evalution team noted that an ironic outcome was that villagers often did not use the piped water system as their preferred source of drinking water because of the chlorination and minerally water waste. Of the 45 communities with functioning systems, in 3 none drank the piped water while in another 11 communities only some users drank it. The younger people were more likely to drink the piped water than their elders. While it was impossible for the team to determine the actual health impacts due to lack of data, they observed that the availability of piped water appeared to have fostered sanitary practices that have beneficial health impacts such as decreased skin diseases and diarrhea.

- In Tunisia, 75% of the project water sites were not reliably disinfected. This may have had a negative impact on health, if users thought the water 'safe' and discontinued their own disinfection. Insufficient health awareness among the rural Tunisians decreased the demand for potable water. The project did not result in substantially more water usage and thus probably had little impact upon improved hygiene. The evaluation team was reluctant to claim any health improvements resulting from the project. Those users interviewed were unable to recall any changes in their health status, if indeed there had been any.

- The health impacts in Kenya were limited to the few systems that worked and to the elite minority with access via personal house connections. The majority of respondents

interviewed by the team felt that reliable water systems improved health as well as other positive impacts. Eight out of 10 communities with reliable water supplies reported lower incidence of skin disease and less diarrhea.

- In Tanzania, there was a concensus in 16 out of 20 communities visited tha the water systems improved health.

(E) Other Impacts: Whereas potable water projects have most frequently been justified as health projects, CDIE evaluations found widespread evidence of numerous other positive impacts. Most important in the perspectives of the evaluators were the significant benefits to women and children resulting from more convenient water sources. As the principal bearers of water in developing countries, many women reported saving up to 3 to 5 hours every day due to new piped water systems. The time saved was frequently reported to be used for productive income-earning activities such as sewing and handicrafts, or for raising livestock and vegetable gardens. The increased availability of water often resulted in families using th water system directly for watering small livestock and gardens in times of draught. These economnic uses were frequently forbidden, however, and contributed in some cases to community water shortages. Illustrations of these impacts from the evaluations include:

- The Peru project reported that the piped water systems saved women an average of three hours a day previously spent hauling water. They used this time for doing household chores, child care, tending animals, sewing, spinning and weaving. The piped water systems were sometimes used for watering animals and gardens and for making adobe, although these practices where supposedly not allowed. The project, by stressing the inclusion of women in every phase of the project, increased their participation in community functions.

- In Panama, the women interviewed reported that piped water had made a major difference in their lives. They saved up to five or six hours a day hauling water through rough terrain. They used the extra time to rest, care for their children, read or engage in income-producing activities such as sewing. Women participated on water committees and successfully managed the collection of water fees. Piped water systems were reportedly used for profit-making activities such as watering livestock and vegetable gardens, although these uses were unauthorized and in two villages visited were associated with water shortages.

- Similarly in Korea, the majority of women interviewed perceived piped water as making their lives easier and providing more time for productive activities.

- In Thailand, women felt the water systems resulted in considerable time-saved for craft activities, increased gardening and farming.

- In Tunisia, the project did not increase water quantity nor made it more conveniently accessible, thus the economic impacts or impacts on women were marginal at best.

Cost-Effectiveness

Comparisons of the costs of potable water projects versus other health projects in achieving specific health impacts, such as infant deaths averted, has sometimes been used as a justification for reducing AID investments in potable water projects. For example, a study by Julia Walsh and Kenneth Warren in Disease Control in Developing Countries, noted that construction of community public taps cost about $20 to $26 per capita and because they assumed low effectiveness in reducing morbidity and mortality from water-related diseases, their calculations resulted in a high cost of $3600 to $4300 per infant and child deaths averted. They did note that house connections, necessary to encourage the hygenic use of water, were far more effective in reducing morbidity and mortality, but they did not calculate cost-effectiveness data for such systems

There are several reasons why such comparisons may be inappropriate and misleading. First, the statistical reliability of surveys and quasi-experimental designs attempting to measure the health impacts of both health and potable water projects can be seriously questioned. Even if they were accurate for specific geographic areas, can they be projected to hold internationally? Secondly, various health programs, such as ORT and immunizations, should be viewed as complementary to water systems rather than competitively. Whereas the ORT and immunization programs are designed to reduce infant and child deaths in the short-term from particular disease episodes or agents, water and sanitation improvements provide a longer-term capacity for both children and adults to avoid and withstand a variety of diseases. Thirdly, water projects provide multiple beneficial impacts, of which health improvements is only one, and, therefore, they should not be evaluated solely on their cost-effectiveness in improving health.

Finally, while the initial capital costs of developing potable water systems may be high relative to other health projects less dependent upon infrastructure development, in the longer-term water projects can be relatively inexpensive to sustain. The recurrent O&M costs tend to be only about 10% of the development costs, and in many successful projects these O&M costs have been completely recovered by community user fees. By comparison, other health projects frequently have higher recurrent costs (as a proportion of developmeht costs and also on a per capita basis) and have been less successful in achieving complete cost recovery via user fees.

(F) Sustainability and Replicability: Sustainable projects are those able to maintain good performance and continue benefits after donor assistance ends. While the development of rural water systems have frequently been largely funded by donors, few donors have been willing to fund their recurrent O&M. Government agencies that have attempted to bear those O&M responsibilities and costs without community user support have typically failed. The many successful potable water projects evaluated by CDIE that were able to attain sustainability had a number of factors in common. These factors, elaborated upon in the following sections, included (a) effective local water committees, (b) well managed implementing agencies responsible for providing technical support, and (c) appropriate water policies and technologies consistent with local environmental and social conditions. In some instances, the CDIE evaluations found that low-cost, sustainable water systems designed by AID became models for widespread replication within a country.

A summary discussion of the CDIE project evaluation findings on sustainability and replication follows:

- In Peru the project used a relatively simple, low-cost (capital costs of $20 per capita) gravity water system design with a proven 16-year history in Peru. The systems were relatively trouble free and for the most part could be repaired locally. Low O&M costs of about 10¢ to 15¢ per month per household were in 5 out of 6 communities completely recovered by the local water committees. The sewer systems component for the project was not appropriate to the situation, requiring too great a labor requirement and lacking adequate treatment. The health education component suffered from institutional problems and interagency conflicts.

- The Panama project used a variety of piped water system technologies including gravity, diesel, electricity and gasoline. With the exception of diesel, which had frequent maintenance problems and high fuel costs, the other piped water technologies were appropriately simple in design and were successfully maintained and operated at the local level. Only 4 out of 26 communities evaluated had problems covering their system's O&M costs (ranging from $.25 per household per month for gravity to $3 for diesel). While most expensive initially ($50 per capita versus $25 per capita for handpumps) the evaluation team argued that in the long term piped water systems were more cost-effective and sustainable than handpumps, which tended to encounter more repair problems and less user willingness to cover O&M costs. The Panama project benefited from effective institutional capabilities of the Department of Environmental Health and from high levels of community participation in all phases of the project.

- The Thailand evaluation team concluded that appropriate technology did not always mean low-level technology. The project's relatively complex piped water systems were proving very sustainable while few handpumps provided under a previous project were still functioning. One reason given by the evaluators was that the simple handpumps failed to be percieved by users as an improvement or convenience over traditional water sources. Of 45 piped water systems visited, 31 were operating at a profit with users via water committees paying full O&M costs. AID was very successful in improving the institutional capacity of the SED to plan, design and construct rural water systems by providing training and technical assistance. The AID system design (costing under $9 per capita) was used not only for 250 AID-assisted systems, but also served as a model for a total of 800 Thai rural water systems by the time of the evaluation.

- The Tunisia project of renovating and protecting existing wells and springs was not self-sustaining. Although the technology was simple and low cost ($20 investment cost per capita) it proved inappropriate by not meeting the percieved water needs and desires of the target population. Futhermore, local water committees were not established and the government agencies responsible the Ministry of Public Health, was not able to maintain or disinfect the sites regularly.

- The Kenya project was not sustainable. A disturbing number of rural water systems had a very short life. The evaluation team concluded that the technology of piped water systems used was inappropriate for the widely dispersed and improverished rural population.

  They noted that diesel systems were less reliable than gravity systems and also encouraged greater use of improved shallow wells and handpumps. The per capita capital costs of $80-$100 were not widely replicable.

  The institutional capacity of the Ministry of Water Development was very limited and they could not meet the recurrent cost burden nor requirements for technical repairs, spare parts or fuel. Institutionalization at the community level and charging user fees was not initiated until well after the water systems were in place and were not yet effective at the time of the evaluation. The health education and sanitation components were inappropriate in Kenya.

- The situation in Tanzania was similar to Kenya. Government budgets failed to provide adequate O&M funds necessary to keep the water systems operating and technical skills were scarce. Lack of organizational capacity led to a proliferation of technologies not necessarily suited to the local rural situations. There was no plan or attempt to replicate the more promising technical designs (gravity systems and shallow wells) and drop the inappropriate (diesel systems). Organizing communities to pay for water use was a belated effort. The evaluators noted that in many instances communities failed to pay, possibly because they saw the systems as government imposed, not their choice.

FACTORS AFFECTING POTABLE WATER PROJECT PERFORMANCE AND SUSTAINABILITY: The CDIE evaluations of potable water projects provide some useful insights into what approaches work well or don't work well. Key factors affecting water project performance and sustainability appear to be their financial viability, organizational capacity, and appropriate technology.

Financial Viability: While donors have typically covered the costs of constructing rural potable water systems, it has generally been the responsibility of the developing nation to cover operating and maintenance costs. Examples from the CDIE evaluations, e.g., Kenya and Tanzania, indicate that governments that have attempted to finance these costs out of their own budgets have failed. Not long after construction, water systems began to disfunction and become unreliable. Belated policy switches to user fee systems have not always been successful: Users see the systems as imposed on them from the outside and may be unwilling to pay. Also, closing public water taps or standpipes has frequently reduced access of the poor majorities.

The most successful potable water systems in terms of financial viability and long term sustainability of benefits has been the model followed in many Latin American countries. From the beginning the user communities are involved in the water systems design and fee structure decisions. This approach has been remarkably successful in many instances (examples from CDIE evaluations on Panama, Peru, Thailand) in achieving financial self-sufficiency and in maintaining reliable systems with relatively equitable access.

A synthesis of evaluation findings indicate that important ways to make local financing schemes work include:

- community water committees should not only be organized but given actual management responsibilities and training in simple repair procedures, basic financial accounting, user-fee approaches, etc. The committee should

participate fully in actual decisions about the water system design and fee structure, so that the water system becomes 'theirs' and they become willing to pay for its upkeep. Women should be included as committee members because they have the greatest vested interest (as traditional water bearers) in the system's maintenance.

- Equity of access by the poorer members of a community can be encouraged while maintaining the principle of user-payments through various schemes, such as (1) credit programs or subsidies for private connections for poorer members of the community; (2) water-sharing schemes (3) increasing the costs of water per unit as volume increases as a way of ensuring the poor can afford minimal water access, while discouraging excessive 'economic' uses by an elite; (4) encouraging private sector fund raising schemes to help pay for community-wide access, such as holding 'fiestas,' and encouraging contributions by local companies or politicians; and (5) continuing to provide public taps or stand pipes in poorer neighborhoods.

- Appropriate technologies requiring low maintenance and operating costs should be favored where feasible. For example, favoring gravity systems over diesel systems that have high fuel costs, foreign parts and frequent mechanical breakdowns. However, simpler and lower-cost systems may not always be the most financially viable in the longer term. Experience from Tunisia and Thailand indicates that unless the user community sees the new systems as having significant improvements of benefits over old water sources, they will not be willing to pay for upkeep. In Thailand the simple technology of handpumps/wells fell quickly into disrepair, while piped water sytems were financially viable. Piped water systems with metered household connections of course also make it easier to assess individual user fees.

Institutional Development: The CDIE evaluations found institutional capacity to maintain water systems at both the community and implementing agency levels to be critical for sustainability

At the level of implementing agency, effective management, supervisory and technical support to the field, good communications and transportation facilities, inter-agency coordination and an adequate organizational budget were critical factors. Government agencies were most frequently the implementing agencies for the potable water projects evaluated by CDIE, although in some instances CARE played a critical management or implementation role.

There is no simple evidence from experience indicating superiority of government agencies or PVOs from this small set of evaluations. In the case of Panama the (Department of Environmental Health) was very effective in its role of designing, planning, constructing and providing technical support for systems. Similarly in Thailand the AID project component of strengthing institutional capacity of the SED through training and technical support, was very successful - promoting a well-run agency. In other instances, for example Tunisia, Korea, Kenya and Tanzania, experience with government agencies responsible for developing, financing and maintaining rural water systems, proved them to be inadequate for the task. Experience with CARE-managed projects was very good in some countries (e.g. Peru) while not so good in others (e.g Tunisia & Kenya).

Organizational capacity at the community level has been even more critical to project performance and sustainability. Most CDIE evaluations agreed that serious problems of system reliability were more frequently associated with lack of local organizational capacity to deal with the O&M problems than due to technical concerns alone. That is, all systems will breakdown occasionally and require some repairs and funds. The ability and willingness of the local water organizations to deal with the repairs and costs were critical to continued system reliability. The CDIE evaluations found generally effective and financially self-sufficient community water committees in Peru, Panama, and Thailand. Isolated instances of systems with O&M problems in these countries were generally associated with ineffective community organization, due to extreme community poverty, lack of leadership, or internal strife. In the projects evaluated in Korea, Tunisia, Kenya and Tanzania there were no effective community water associations. The water systems in these countries had generally been "imposed" upon the communities without their active participation, and at least initially without responsibilities for assisting in construction, maintenance or financing of the systems. All of these projects encountered serious O&M problems, unreliable systems and shrinking benefits. Policy changes in Kenya and Tanzania to switch to user-fee financing structures may have come too late, encountering collection problems and resulting in closure of public taps and even greater loss of water benefits and inequities.

In summary, factors found to enhance community organization and participation in water projects include:

- Basing Choice of Communities to receive water systems upon not only their need but also their enthusiasm, willingness and capacity to organize, participate, and pay for the system.

- Using a participatory approach from the beginning, including the community in the water system decisions

and making clear their responsibilities. In the most successful cases, communities provided labor and shared in the material costs of construction, were involved in the technology choice, devised innovative approaches for fund raising to meet O&M costs and undertook repairs themselves.

- Including women and poor groups with vested interests on the water committee, even if these groups have no history of participation in community affairs. Avoiding takeover of communities by elites to ensure equitable system access.

- Providing basic training for community water committee members, not only in technical repairs of the system, but also in financial accounting, bill collection and fund raising, and simple organizational and management techniques.

Appropriate Technology: The CDIE evaluations of potable water projects do not point to simple answers on appropriate technologies. While in general they warn against use of overly complex and expensive systems dependent upon foreign parts and fuels, 'simple' technologies were not always deemed best in all situations. The appropriateness of a water system technology depended on a variety of technical, economic, social and environmental conditions:

- Water source availability and technical feasibility. A first condition in choosing water systems is of course the feasibility of alternative approaches. For example, use of gravity systems are only feasibile if the source of water is substanially higher than the villages served.

- Technical complexity of the system and reliance upon foreign parts and imported fuels. In general, the evaluations encouraged choice of simple durable designs that could be operated and repaired locally, without dependance on foreign parts, fuels or technicians. Diesel systems were in most instances considered inappropriate, while gravity systems were most favored by this criteria.

- Population dispersion. This was mentioned as an important factor in some evaluations. The evaluators of the Kenya program argued that piped water systems and individual household connections were inappropriate and costly given the dispursed settlement patterns in rural areas.

- Social and economic factors. The water system preferences and desires of the community and their willingness and ability to maintain alternative systems is another important factor. Simple handpumps in Tunisia and Thailand failed because they were not perceived by the target population to be a significant improvement over traditional water sources. The more complex piped water systems in Thailand, Panama and Peru proved to be successful and sustainable in the long-term because communities valued the convenience and increased availability of water enough to pay for the service. Piped water systems were less successful in Kenya and Tanzania where rural poverty combined with a highly disbursed population made individual house connections uneconomic, unsustainable and unreplicable.

FOOTNOTES

[1] Blueprint for Development: The Strategic Plan of the Agency for International Development, June 1985, pp vi

[2] Life expectancy and Infant Mortality Data are from AID's "Economic and Social Data Bank" maintained by PPC/CDIE. The 75 AID recipient countries included in the analysis are all countries with FY 1986 obligatins except for four "developed" European countries, Italy, Poland, Portugal and Spain.

[3] Blueprint for Development, op cit, p.v.

[4] AID Policy Paper: Health Assistance, Dec 1982, pp 3-5

[5] Memo from Brad Langmaid dated Feb 12, 1986 to the Child Survival Task Force, draft Child Survival Strategy.

[6] AID Policy Paper: Domestic Water and Sanitation, May 1982.

[7] Assessment of health program trends is based upon the AID database "Summary of Obligations in Functional Subcategories by Bureau" in Background Paper: AID Health Assistance," Sept. 1985 prepared for PPC/CDIE by University Research Corporation.

[8] Based upon a review of CDIE primary health care evaluations including: Korea Health Demonstration Project, AID Project Impact Evaluation Report no. 36, July 1982; Senegal: The Sine Saloum Rural Health Care Project AID Project Impact Evaluation Report No. 9, Oct. 1980; Prospects for Primary Health Care in Africa: Another Look At The Sine Saloum Rural Health and Nutrition Program, draft Sept 1983; and also findings from Primary Health Care: Progress and Problems: An Analysis of 52 AID-Assisted Projects, August 1982, by the American Public Health Association.

ANNEX 2: AID Health Expenditure Trends

ANNEX 1: LDC Progress Towards Achieving Health Targets

ANNEX 3: Summaries of CDIE Health Sector Impact Evaluations

KOREA HEALTH DEMONSTRATION PROJECT

This Primary Health Care project demonstrates how a project that begins with promise can run into serious problems if government health policies are not appropriate. It is also an example of the potential for conflict and duplication between project trained paramedicals and the existing private medical establishment.

The demonstration project began in 1976 with the purpose of testing alternative approaches to providing low-cost, integrated health care services in three rural areas, for eventual replication to other parts of Korea. A semi-autonomous organization, called the Korean Health Development Institute, was created to operate and evaluate the demonstration sites. The project established and trained cadres of paramedicals who were to provide preventive and simple curative care to villagers. Several alternative community financing schemes were to be tested by the project, including a community cooperative and a health insurance approach.

The early history of the project was promising. Between 1976 and 1979 the utilization of health services in the three demonstration areas increased by 86%, compared to a 47% increase in control areas. Considerable progress had been made in improving access to health care services and in increasing the use of the new health workers. Also, the project's health units were relatively cost-effective, at an average cost per visit of under $2. Community financing schemes were contributing substantially to covering costs.

However, after 1979 the policy environment changed. Several events occurred that have seriously reduced the project's viability. During 1976 to 1979 as utilization of the project's primary health care units increased, the businesses of private physicans near the demonstration area were being harmed, with declines of 30-40%. The physicians complained to the government authorities that the project paramedicals were providing curative services in violation of Korean medical laws. As a result the curative duties of the paramedicals were curtailed in 1979, which seriously eroded demand and utilization of their services among the villagers.

Other policy changes negatively impacted the project performance. Large numbers of medical students were graduating and were being sent to rural areas and were providing alternative options for medical services. In addition, a mandatory health insurance scheme was instituted in Korea in 1980 which reduced the fee differential between visits to project paramedicals and private physicans, thus causing a further decline in project service utilization. By the time of the CDIE evaluation in 1980, utilization of the primary health care units was so low that economies of scale could no longer be realized. The cost per visit had increased to $ 3 and the system was no longer financially sustainable at current levels of support.

This case illustrates that establishing a semi-autonomous institution to develop a potentially new health care system is a risky endeavor in the absence of strong government commitment to the concept. In the case of Korea, the Ministry of Health viewed the fledging system as potentially competitive, and supported the political efforts of private physicans to circumscribe the paraprofessional's scope of practice.

SENEGAL, SINE SALOUM RURAL HEALTH CARE PROJECT

The story of the Sine Saloum PHC project is one of a troubled project turned around into a success. In its early years the Sine Saloum project faced a series of difficulties that nearly caused it to close down. As a result of a 1980 CDIE Evaluation the project was overhauled. By the time of a 1984 Evaluation the USAID Mission and the Senegalese Government had made a number of program and policy changes that enabled the project to succeed.

The Sine Saloum health project was initiated in 1977 and aimed to create a network of self-supporting, village-based facilities staffed by village health workers who would provide basic preventive and curative services. The active participation of villagers was to be sought for selecting candidates for training and for constructing the village health units. Also, villagers were to provide financial support via payments for drugs and contributions to health workers' salaries.

By 1980 certain achievements had been made. More than 400 villages in Sine Saloum had constructed health units, had organized health committees and helped select hundreds of villagers for health training. However, there were fundamental weaknesses which jeopardized the viability of the entire system. Many of these problems were characteristics of "first generation" PHC programs worldwide.

The program was too ambitious and had expanded at too rapid a pace. As a result, village health committees, which were critical to the concept of a community-managed and financed primary health care system, had not been properly trained for their responsibilities. The health units were not financially viable, not charging enough fees to cover their operating costs. Supervision and support for the village health workers were inadequate and the system for replinishing medicine supplies was inadequate.

The 1980 Evaluation pointed out these shortcomings and made a series of recommendations which were seriously acted upon by the USAID Mission and the Senegal Government. Project management was strengthened both in AID and in the MOH and health worker supervision was strengthened. Expansion of health units was slowed down and community level activities were intensified to increase the villagers' understanding of the health programs and their responsibilities for financing and managing village-level activities. The village-health management committees were trained to keep simple financial accounts and to handle drug reorders. The system of fees and charges for the health services and payment of health workers was reviewed and modified to increase financial viability.

The 1980 evaluation also pointed out that a health policy of providing free health care services at the next higher (dispensary) level in nearby towns was making it difficult (as well as inequitable) to charge

for services at the village level. USAID policy dialogue led the Sengalese Government, despite the political unpopularity of the action, to reverse its policy and to charge fees for health services at all levels. This decision further enhanced the ability of the PHC project to achieve greater financial self-sufficiency, as well as to improve the viability of the whole health system.

The Sine Saloum project is one of few examples of PHC projects that have managed to achieve a high degree of financial self-sufficiency through community level participation and contributions, covering the major costs of health unit maintenance, drug supplies and village worker salaries. Financing sources include service charges, allocations from the village treasury and contributions in labor. Keys to its success have been the post-1980 emphasis upon enhancing villagers participation, improving project management at all levels, and reversing health policies that hindered performance.

WEST AFRICA ONCHOCERIASIS CONTROL PROGRAM

The Onchoceriasis Control Program (OCP) is an example of a highly successful vertical health program that has all but erradicated Onco, or "river blindness" from huge tracks of savannah in West Africa. While extremely successufl in meeting its immediate objective of Onco disease control, the challenge for the future will be how to avoid recurrence and achieve long-term sustainability within the existing health structures of the West African countries involved.

Oncho is a major endemic parasitic disease which affects millions of people in Africa and in serious cases can cause blindness. The disease is transmitted to humans by blackflies which breed near fast-flowing rivers and streams. Many fertile valleys near major waterways have been deserted by the populace because of this dreaded disease.

The OCP was started in 1974 as a 20-year effort, funded by 19 donors, to control Oncho in 11 West African countries. During the first 10 years efforts have been concentrated in 7 West African countries. The OCP organization consists of the policy-making Joint Program Committee (consisting of the multi-rational sponsoring agencies, the bilateral donors, and participating governments), several specialized technical and coordinating committees, the WHO as executing agency of the program, and the World Bank as financial manager.

The overiding aim of the OCP has been to interrup the transmission of the parasite to humans by destroying the blackfly host. This was accomplished by wide-scale, aerial spraying and other control measures to destry blackfly larve.

Research and training have been essential to program success. State-of -the art research on the Oncho disease cycle and modern technologies have swiftly solved problems as they occurred, such as fly reinvasions and fly resistence to certain insecticides.

In 1985 a CDIE evaluation team documented the success of the first ten years of the OCP and highlighted issues for the future. Field tests conducted by the CDIE evaluation team in 1985 noted near erradication of blackfly populations in the controlled areas.

Oncho disease prevalence has dropped from 90% to 50% and will continue dropping in future years as the parasites' life cycles are broken. More than 3 million children born since the beginning of the program are free of the disease. Some 27,000 cases of blindness have been prevented and about 15 million hectares of disease infected lands are how safe for settlement and development. This has been accomplished at a low cost of approximately $ 1 per protected person per year.

The Oncho free lands have attracted new immigrants in the thousands and new investments in the hundreds of millions of dollars. Documented successful investments undertaken in the area, for example, include the large cotton and maize production efforts in Southern Mali, the

sugar refineries in the Ivory Coast and Burkina Foso and the officially-sponsored settlements of twenty-five thousand people along the Volta rivers.

The evaluation highlighted a major issue for the future: maintaining disease control over the long term. Once disease incidence has been greatly reduced, a system is needed to keep the disease under control. While maintenance control is nowhere as expensive as the initial OPC efforts, it will require comprehensive financial and institutional mechansims to keep the disease from reappearing. Local governments will have to set up monitoring, training and treatment systems. LDC health systems will be hard pressed to take on the task of adequate Oncho maintenance programs into their already overloaded health systems. The problem is how to make a technically sophisiticated vertical program a part of an ongoing horizontal, maintenance effort.

COLOMBIA PROMOTORA HEALTH AND NUTRITION PROGRAM

The Colombia Promotora Health and Nutrition Program illustrates many of the partial successes and problems characteristic of the "first generation" approach to primary health care.

Several AID health sector loans since 1973 supported Colombia's health system, particularly the development of a rural-outreach primary health care program. The PHC program was operated and funded by the Ministry of Health. Paramedical cadres, including some 10,000 "promotoras," received training with AID funds, and then became salaried civil servants working in rural areas..

A 1981 CDIE evaluation concentrated upon assessing the promotra program in an area called Huila. Promotoras were primarily young women selected by their villages for three months of training in preventive and basic curative medicine.

The evaluation found that the promotoras were enthusiastic about the training they had received, were highly motivated in their work and had a good grasp of basic preventive and simple curative knowledge that the training course had covered. Project targets in constructing health posts had been met and the promotoras were actively reaching the target population in Huila. However, each promotora was only serving about 500 persons, rather than the targeted 1000, because of the rough terrain and transportation problems.

The evaluation team undertook a small survey of households in the areas served by promotoras and in a control area, in order to find differences in health and nutrition service utilization, practices, and status. The results included significantly higher child immunization levels, greater use of aqueduct water and boiling and filtering of water among areas served by the promotoras than in the control areas.

There was also greater knowledge among mothers of appropriate infant child feeding practices and diarrhea treatment, although it was not clear whether this knowledge was being put into practice. There was no difference in family planning practices, possibly attributable to the fact that while promotoras had been trained in contraceptive knowledge, they did not dispense them. The survey found no noticable differences in health or nutrition status, possibly because of the small sample size, the short time frame, or the plurality of factors contributing to disease prevalence besides the promotoras' presence.

Despite the positive progress made by the promotora program, the evaluation also noted some major problems and issues. The promotoras' effectiveness was limited by inadequacies in supervision, transportation and logistics support. Perhaps the most critical shortage was in basic medical supplies. This shortage in the official source of medical supplies led in some cases to spontaneous and innovative solutions by the community. Promotoras who were well supplied had purchased

medicines through local fund-raising schemes worked but by community action committees or by the Federation of Coffee Growers. In other areas the promotoras either had fewer supplies than needed or purchased them with their salaries. Lack of basic medicines left some promotoras serving primarily educator roles which often resulted in communities perceiving them as "virtually useless".

The inadequacies in the support provided to promotoras was primarily a question of financial constraints. The public health system as a whole was already running a large deficit in 1980, and the costs per beneficiary of $2.80 per year for the rural health system had proven much larger than planned. The evaluation projected that if the promotoras program were to be extended to the 36% of the population in need of such services, the salaries alone would approach 80% of the current total health budget. They concluded that unless local financing approaches could be initiated to supplement the national funding, it was unlikely that the population in need could be covered nor that adequate support would be forthcoming to increase the promotoras program's effectiveness.