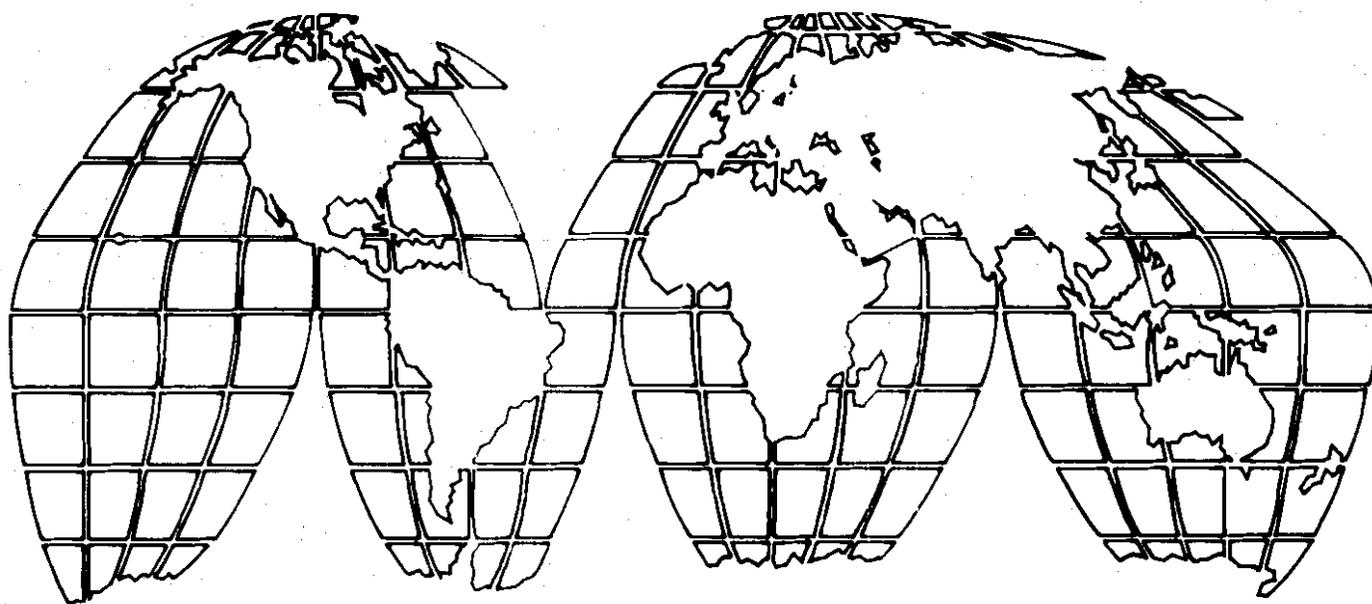


A.I.D. Evaluation Special Study No.20

**PROSPECTS FOR PRIMARY
HEALTH CARE IN AFRICA:
Another Look At The Sine Saloum
Rural Health Project In Senegal**



April 1984

U.S. Agency for International Development (AID)

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A.I.D. Evaluation Special Study No. 20

by

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U.S. Agency for International Development

April 1984

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PREFACE

The Sine Saloum Rural Health Care Project, one of the Agency for International Development's early large-scale primary health care projects in sub-Saharan Africa, provides a fascinating case study in the problems of creating a viable health program in a poor, rural environment.

A.I.D.'s support for health activities in Sine Saloum, Senegal began in 1978. When A.I.D. sponsored an impact evaluation of the project in 1980, the program was teetering on the brink of failure. (See: A.I.D. Impact Evaluation No. 9: Senegal: The Sine Saloum Rural Health Care Project (October 1980) PN-AAJ-008).) This special study, carried out in 1983, reports on the aftermath of the pessimistic 1980 evaluation. It was written by Abby L. Bloom, A.I.D.'s Senior Health Policy Advisor, who has had an interest in Senegalese culture, politics and rural economy for a dozen years.

The study describes the impressive reversal of the failing project, and examines the policy and programmatic changes that were instrumental to its new found success. A major theme that emerges from this review of the program is the critical importance of village payments towards the cost of health care, and the surprising success of village management of user fees. The cost recovery and local management elements of the project have implications for development programs in other sectors, and I would recommend this case study to anyone who has faced the question of how communities can be most effectively involved in the development process.

On the other hand, the author raises a number of important but unresolved issues and new problems emerging from the Sine Saloum project. These will be a useful warning for those involved with similar projects at an early stage of implementation.

Finally, the study demonstrates how candid, albeit critical evaluations, when taken seriously and acted upon, can make a difference in the outcome of development programs.



M. Peter McPherson
Administrator

U.S. Agency for International Development

FOREWORD

A basic ingredient of any successful primary health care program is active community development. A second essential element is a sound financial base. To achieve these aims, a PHC program must meet the community's perceived needs, must be affordable, and must be socially and culturally acceptable. This case study of a primary health care program in rural Senegal analyzes how that program has been successful in incorporating both these ingredients, and thus in creating a basic health system in which village health care is managed and financed largely by the community. The Senegal case study offers numerous lessons that will be undoubtedly of interest in other settings, and also raises many unresolved issues and questions.

ACKNOWLEDGEMENTS

The author wishes to express her appreciation to three people who are in large part responsible for the thoughtful approach to the Sine Saloum Rural Health Project described in this paper: Dr. Michael White, A.I.D.'s Chief Health Officer in Senegal; Ms. Patricia Daly, of A.I.D./Senegal; and Mme. Aida Lo Faye, the midwife/project administrator whose dedication and dynamism have been instrumental to the project's success.

ABBREVIATIONS AND GLOSSARY

A.I.D.	Agency for International Development
ASC	Agent de Sante Communautaire or Community Health Worker (CHW)
CDC	Center for Disease Control (Atlanta, Georgia)
CFA	Communaute Financiere Africaine. At the time this review was conducted (March, 1983), the official exchange (which fluctuated) was approximately CFA 225 = \$US 1.
Communaute Rurale	The governmental, administrative and political unit at the level of the town.
CHW	Community Health Worker
GOS	Government of Senegal
Health Center	Third level of health system. Health centers are generally located in towns or secondary cities, and their staff includes at least one physician and one nurse.
Health Post	Second level health facility, generally located in larger village or small town. Directed by a nurse (infirmier chef de poste), who also supervises community health workers in health huts.
Health Hut	Primary level health facility, usually one room, of mud construction, located in rural villages (see: village siege/core village)
Infirmier Chef de Poste	Health post nurse and supervisor of village health workers
Matronne	Trained village midwife; female village health worker
MOH	Ministry of Health
ORT	Oral rehydration therapy

PHC	Primary Health Care
PNA	Pharmacie Nationale d'Approvisionnement, the Government of Senegal National Drug Supply Department
Secouriste-Hygieniste	First aid-sanitation worker
TAI	Technician d'Assainissement Itinerant or sanitation technician

SUMMARY

Most Primary Health Care (PHC) programs in developing countries experience problems of implementation and viability. Senegal's Primary Health Care program in the Sine Saloum region was no different. Yet by all measures it must now be considered well on its way to success. This case study documents the process of transforming a foundering project into a functioning program.

The principal lesson learned from Senegal's PHC program is that a thorough, critical evaluation, when taken seriously and acted upon by a donor and the recipient developing country government, can turn a failing program around. In Senegal, the Government of Senegal's willingness to make the changes recommended by an evaluation have yielded impressive results: to develop a viable fee-for-service system, to decentralize certain aspects of program management, and to encourage community participation in the program's operation. These steps were coupled with necessary changes in project management by both A.I.D. and the Government of Senegal. Important modifications in policies were required, and the policy changes that evolved from continuing discussions between A.I.D. and Senegalese officials have paid off. After three years of innovation and modification village-level health care in this PHC program is largely managed and financed by the community.

Three years ago the Sine Saloum PHC program was on the brink of failure. A 1980 evaluation concluded that even though a large number of village health workers had been trained and deployed, a series of grave problems jeopardized the program's future. The most critical problems were:

- The village health facilities (health huts) were not financially viable: huts were not recovering their operating costs (particularly the cost of medicines), and were decapitalizing rapidly. Many had closed or would soon cease operating because they would lack the cash to purchase new supplies of medicines.
- Supervision and support for village health workers were inadequate: workers were supervised poorly or not at all. Supervision at higher levels was also feeble, and lack of appropriate transportation for supervisors exacerbated the situation.
- The drug supply and transportation system could not cope with the new demands imposed by the PHC program.

The Sine Saloum PHC program was redesigned to incorporate the findings of the 1980 evaluation. Now, three years later, the Sine Saloum program has turned around and community-level health services are largely self-financing. Among the steps taken to reverse the deterioration of the program are:

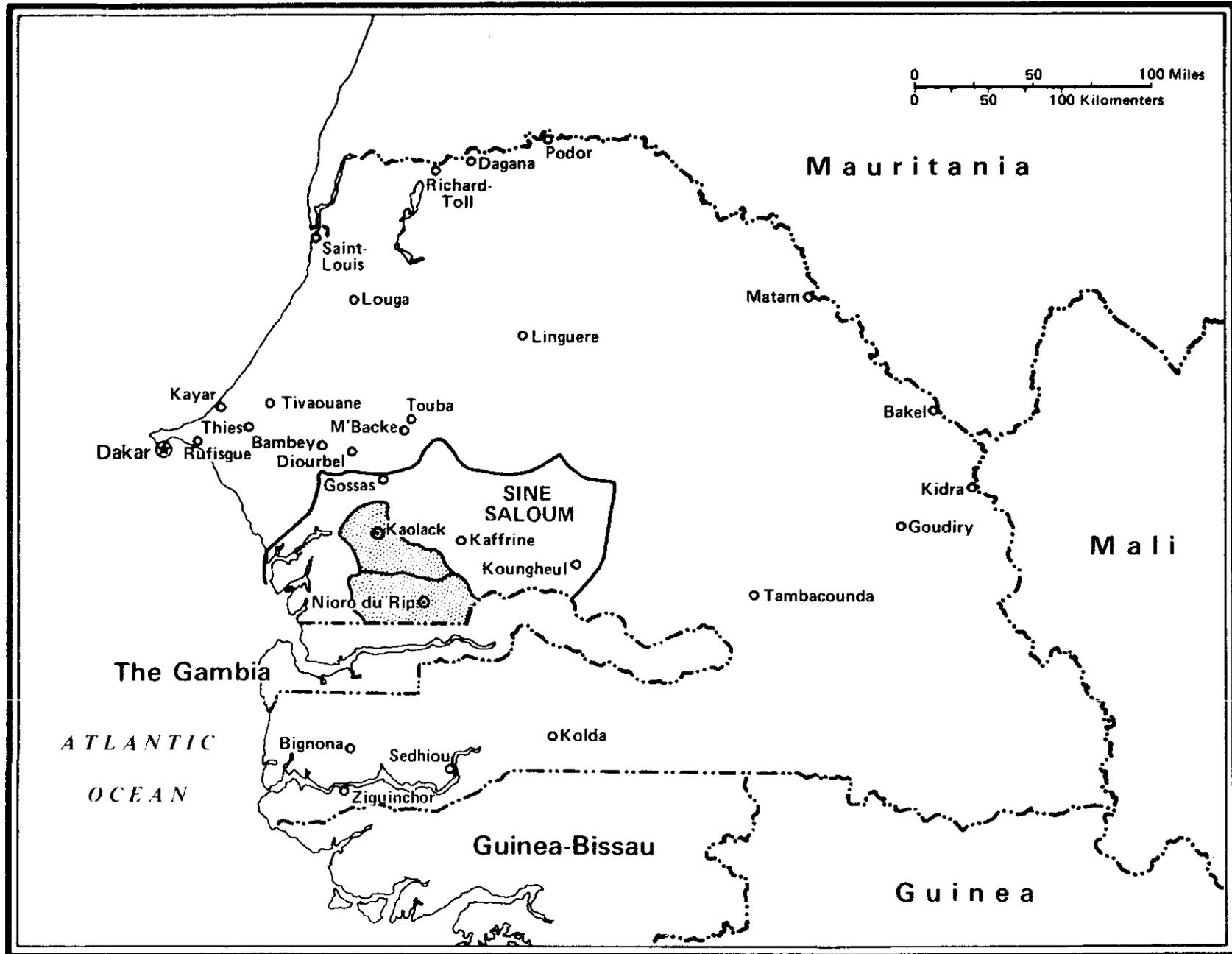
- Standardization of user payments for health care and medicines.
- Village contributions to the salaries of village health workers; cash or in-kind contributions for construction and maintenance of village health huts; and payments (in the form of taxes or direct contributions) used to build the stocks of regional pharmacies.
- Vigorous training of community members in their management and financial responsibilities under the new PHC system.
- Improvements in selection, training, and supervision of community health workers.
- More intensive management of the project by USAID.

The Sine Saloum PHC program exemplifies the type of health project the Agency for International Development is most interested in promoting. It emphasizes improved program management and implementation in the interest of increased program effectiveness, and it is financed largely by clients.

The Sine Saloum PHC program is not without problems, however. For example, the program is largely curative; it has had little success introducing preventive measures, such as improved health and hygiene behaviors, oral rehydration therapy, and family planning information and services. The program's near exclusive emphasis on curative services results from the fact that at least at present it provides mainly those services that clients demand and are willing to pay for. Lacking are the kinds of essential PHC activities -- education, outreach, surveillance -- necessary to effect the attitudinal and behavioral changes which lead to long-term improvements in health status. In addition, more analysis and experimentation will be needed to determine if other costs of the health care system - such as supervision - can be user financed while still offering attractively priced services. Finally, recent research suggests that client satisfaction and participation could be significantly improved, thereby increasing utilization of much-needed health services.

Yet the Sine Saloum program is one of only a handful of PHC programs in the developing world that are successfully managed and financed by users at the village level. The lessons derived from the Sine Saloum experience go far beyond the health sector and provide valuable insights for those concerned with community development programs in general.

Senegal — Showing Sine Saloum Region and Kaolack and Nioro Departments



I. INTRODUCTION

Can primary health care programs succeed in the harsh geographic and economic environment of the Sahelian countries? Can they be sustained by the populations they serve? Once a primary health care program has proven unviable, can it be salvaged? How can critical program evaluations serve as blueprints for future success? The primary health care program in Sine Saloum, Senegal, offers valuable insights into these fundamental issues facing primary health care in sub-Saharan Africa and elsewhere in the developing world.

In 1980, as part of a series of evaluations designed to measure the impact of programs funded by the U.S. Agency for International Development, a multidisciplinary team of development planners evaluated the rural health program in Sine Saloum, Senegal. The findings, described below, were quite negative. However, the reaction of the Senegalese and Americans to the evaluation was significant. Instead of attempting to dilute the evaluation's trenchant criticisms and recommendations, they accepted the evaluation results and moved swiftly to adopt the recommendations for improvements. The result has been a genuine turnaround in a project that had been headed for certain failure.

Three years have elapsed since the Sine Saloum program was first evaluated. During that time several other studies have been completed, and a new program is under consideration in the same region. This paper analyzes the changes that have occurred since the evaluation, and discusses key characteristics of the program and their implications for primary health care in Senegal and other settings.

II. BACKGROUND

A. The Setting

The Sine Saloum region covers an area of 24,000 square kilometers (12 percent of the land mass of Senegal), and comprises approximately 20 percent - 1,200,000 - of the country's total population (estimated at six million in 1982). Sine Saloum consists of six departments: Gossas, Nioro du Rip, Foundiougne, Kaolack, Fatick and Kaffrine in the heart of Senegal's "peanut basin". Peanuts account for much of the country's export earnings and Sine Saloum alone accounts for almost two-thirds of these exports. The Sine Saloum region is a magnet for male migrant agricultural labor.

Two ethnic groups, the Wolof and the Serer, together comprise 77 percent of the population of Sine Saloum. The Wolof, characterized by the remnants of a strict hierarchy of

castes, have traditionally cultivated millet, peanuts and vegetables. Most Wolof subscribe to Islam, and many belong to the nationalistic Moslem brotherhood known as the Mourides, who exert a powerful influence over Senegalese politics. The Serer, also a stratified group, continue their traditional practice of cattle herding and also cultivate peanuts. Unlike the Wolof, the Serer are non-Muslims, and many remain animist to this day.

The extended family is the traditional production unit among both the Wolof and the Serer. Over the years the focus of production activities has shifted from the communal plot, which has gradually diminished in size and importance, to the individual plot, whose size and importance has increased commensurately.

The principal economic activity in Sine Saloum is agriculture, although animal husbandry is a common primary or secondary source of income. Peanuts and millet are the major crops in the region. Peanuts are strictly a cash crop, while millet (supplemented by corn, rice, and cowpeas) is the traditional staple diet in the area. Agriculture in Sine Saloum is almost exclusively rain-fed, and the productivity of the sandy soils has decreased markedly in modern times as a result of overcultivation exacerbated by rapid population growth. Demand for labor is periodic, and peaks between May and October, the rainy season, when agricultural activity is most intense.

Life expectancy in Senegal, 44 years on average, is short; the crude birth rate, 48/1000, and the infant mortality rate, 118/1000, are high. Sine Saloum's population growth rate, approximately 4.0 percent a year, exceeds the national average (2.8 percent) because of in-migration to meet the demand for labor in the region. Use of modern family planning methods is almost negligible.

Illness in Senegal is highly seasonal. Morbidity (illness) rises dramatically in July and August, just after the rainy season has begun and environmental conditions are most conducive for the transmission of malaria and enteric and diarrheal diseases. Malaria is the most common serious illness among adults. Diarrhea, measles, respiratory diseases, malaria and tetanus are the leading causes of death; diarrhea is the most frequent cause of death among children. Although malaria is present throughout the year, it peaks during the prime agricultural months when labor requirements are greatest. In Sine Saloum morbidity from malaria is high among all age groups, but among children aged 1-4 it has a case fatality rate (ratio of deaths to total number of cases) of 18 percent, and

probably accounts for one-quarter of all deaths among young children.

The overall nutrition status of Senegalese mothers and children is poor: low birthweight is a problem affecting 10 percent of all infants; one-quarter of pre-school children weigh less than 80 percent of the standard weight for age; anemia is common among both women and children; and a substantial portion of children aged 1-6 years receive less than 75 percent of their daily caloric requirements.

Access to health services in Sine Saloum has improved substantially with the establishment of 378 health posts in the recently completed A.I.D.-funded health project. Nevertheless, access to mid-level health service providers remains particularly poor in the region.

B. Project History

The Sine Saloum Rural Health Project, designed in 1977, was one of the Agency for International Development's early primary health care (PHC) projects in sub-Saharan Africa. It was intended to address a variety of deficiencies that pervaded the existing health system, including:

- Inadequate numbers of trained health and community development personnel.
- Poor supervision at all levels of the health system.
- Exceedingly poor access to health care, due in part to insufficient numbers of health facilities, particularly health posts (the most accessible source of health care for the bulk of the region's population).
- Inadequate supplies of essential drugs and long delays in drug procurement.
- A weak support system for health worker supervision and patient referral, and
- Underfunding of the health sector by the Government of Senegal.

The objectives of the project were:

1. To establish a network of 600 village health posts staffed and supported by 1000 community-level personnel throughout the region; and

2. To improve and strengthen the Government of Senegal's ability to support services offered at its health installations.

The program was designed to provide services to approximately 880,000 people in five departments of Sine Saloum. The total cost of the four year project was \$5,021,282, of which A.I.D. provided \$3.3 million (for technical assistance, vehicles, medical equipment, training and supervision and the initial inventory of medicines for health huts).

1. The Original Sine Saloum Primary Health Care Project

The original Sine Saloum health project had many features in common with PHC programs elsewhere. The program's aim was to create a network of self-supporting rural health huts (i.e., village-based facilities) in five of the six departments of Sine Saloum. Active participation of villagers was sought for constructing village health huts, encouraging use of the new services, payment of salaries to part-time village health workers (a health assistant, trained midwife, and sanitarian), and payment for drugs received. The huts would provide the basic, primary health care services that would address the major causes of poor health in the region, and become part of a comprehensive primary health care system. The principal elements of the project included:

- Renovation of 58 existing health posts and construction of 15 new health posts.
- Renovation of a regional school for training workers in environmental sanitation.
- Provision of cement and other materials for construction of 600 health huts by villagers.
- Provision of vehicles, horses and buggies, audio-visual aids, and literacy and teaching materials.
- Training for village health workers, their supervisors and environmental sanitation workers (including materials, living expenses, and, in some cases, travel costs).
- Technical assistance in curriculum development and training.
- Long-term technical assistance in public health administration and nurse-midwife training, and

-- Program evaluation (including a baseline survey and an independent evaluation).

2. The 1980 Impact Evaluation

An A.I.D.-supported evaluation of the Sine Saloum Health Project, in April 1980, identified some significant achievements (in addition to the usual project delays). It also found "...a project with serious problems and in danger of collapse."

a. Achievements

By 1980, more than 400 villages in Sine Saloum had constructed health huts. Villagers had organized health committees, and helped construct or renovate health huts, and had selected candidates for training as secouristes (village health workers), matrones (trained midwives) and hygienists (village sanitarians). The Ministry of Health had developed materials for training these workers, and had trained and deployed hundreds of workers to village health huts or (in the case of supervisory workers) to health posts. Record-keeping and drug procurement systems were implemented, and an initial and replacement drug stock had been provided. The Ministry of Health had instituted a schedule of fees for hut visits and drugs. Community motivation activities were initiated, and health information was provided in a weekly radio program intended to give supervisory support to program staff and to motivate prospective clients. Health post staff trained and initially partially paid through the project were (at least theoretically) supervising health workers, and regional and departmental staff were in turn supervising the post staff.

Yet these achievements masked fundamental weaknesses which the evaluators deemed so critical as to jeopardize the viability of the entire system. Many of these problems are characteristic of "first generation" primary health care programs worldwide.

b. Problems and Issues

The evaluation concluded that the program was generally too ambitious in scope, and the pace of implementation had been too rapid to organize and train village health committees properly and develop an infrastructure capable of adequately supporting the growing health care system. There were a number of grave problems:

1. The health huts were not financially viable. A simple financial check of a sample of health huts revealed that the huts were not taking in sufficient money to cover the replacement of medicines and other operating costs. When reported receipts were compared with reported expenditures, virtually every village health hut showed a significant shortfall. Moreover, the villages did not have on hand as much cash as their books stated. There were several possible explanations: medicines were priced too low; health workers received excessively high salaries; the discrepancy was a result of theft or other improprieties; or patients were not paying for medicines received. However, the inescapable conclusion was that the huts were steadily losing money, and, at the existing rate of decapitalization, huts that had not already closed would soon cease operating.

2. Supervision and support for village health workers were inadequate. Supervision of village health workers was the responsibility of the infirmier chef de poste (health post nurse). Supervisory visits were infrequent, and this lack of supervision was probably the single most important weakness in the overall program. The project's regional supervisory team and the A.I.D. staff had concentrated on program expansion rather than support, and consequently supervision at the village level was particularly inadequate. Departmental supervisory teams had never been formed. Support and supervision throughout the system were feeble, and lack of transportation exacerbated the problem. Moreover, it seemed unlikely that sufficient funds would be generated by the existing system to finance increased supervision, particularly after A.I.D.'s funding ceased.

3. Ability to replenish medicine supplies in the health huts was questionable. Although it was too early in the life of the program for any firm conclusions about the drug supply system, the evaluation team doubted that it had the capacity to meet the huts' needs for drugs.

4. Many health huts were located in such close proximity to one another or to health posts where medicines were distributed free, that competition was causing many (one-half in one region) to close.

5. Attrition among health workers was high (there was a turnover rate of more than one-third in one region).

6. Charges for visits and medicines and payments to village health workers varied from site to site, and were determined without regard to the long-term financial viability of the huts. Village health workers were receiving the lion's share of hut revenues, which severely drained the system's capital.

7. Transportation for supervisory personnel is essential to the performance of their functions. But the horses and buggies procured for the health posts turned out to be "inappropriate technology". It was thought that horses and buggies would not impose a financial burden for operation and maintenance commensurate with that of cars and motorcycles. However, supervisors (Chefs de Poste) felt that use of horses and buggies would lower their status. The buggies were inconvenient; they were built to exact specifications and severely strained the horses; and were exceedingly heavy.

Because of the high cost of feeding horses during the dry season, and the equally high cost of veterinary services that people could ill afford, many of the horses died. With supervisors reluctant to travel in the horses and buggies, village health workers lacked needed technical and supervisory support.

8. Although village health committees had been formed in most hut villages, members had been inadequately trained and were not managing the health teams as intended. Village health workers themselves made most decisions, including those concerning their own compensation and management of the drug supply.

9. Ministry of Health and Promotion Humaine (Community Development) staff were poorly trained in community development and technical health skills, and lacked training materials for their community activities.

10. The village hygiene workers were not respected and hence were underutilized. Their salaries imposed an unjustifiable financial drain on villagers.

11. No baseline health survey had been collected at the outset, and it would thus be impossible to adequately evaluate the effect of services provided under the program on health status in the region.^{1/}

The evaluation concluded that there was some evidence that the availability of health care and medicines at village health huts was lowering the high rate of utilization of health posts (the next higher level in the system). Nonetheless, it concluded that without immediate, drastic measures, the principal result of the project would be frustrated expectations among the populace of Sine Saloum.

^{1/} An innovative, comprehensive survey to measure morbidity, mortality, nutritional status, and knowledge, attitudes and practices with regard to family planning was conducted in collaboration with the U.S. Center for Disease Control (CDC).

c. Recommendations of the Evaluation:

The evaluation included a series of recommendations designed to salvage the Sine Saloum health project:

1. The structure of user charges should be reviewed and revised to avert financial collapse of the system.
2. U.S.A.I.D.'s management of the project should be improved by, among other things, locating a project management team permanently in Kaolack, the regional capital of Sine Saloum.
3. The location of existing health huts should be reviewed and redundant huts closed promptly; new criteria for locating future health huts should be developed.
4. Policies on payment of health workers, criteria for selection of health workers (such as literacy), and specifications for vehicles should be reconsidered.
5. An adequate supervision and support system for village health committees should be devised and implemented.
6. A record-keeping system should be devised that could be used by illiterate villagers and serve as a management tool for project administrators.
7. Plans to expand the project into additional departments should be postponed until the health huts were operating satisfactorily in existing departments.
8. Expansion of the program should be contingent on incorporation of an effective family planning component, as originally proposed in the project design.
9. A joint U.S.A.I.D.-Government of Senegal review of the program's recurring costs should be followed by firm assurances of adequate government budgetary support.

d. The Consequences of the 1980 Evaluation: Redesign of the Sine Saloum Program. Critical evaluation reports like the Sine Saloum evaluation are often suppressed. Criticisms of host country efforts can be seen as embarrassing for the host country, and consequently often are viewed as potential causes of strain between donor and host country. Moreover, donor officials usually eschew implicit and certainly direct criticisms of their own actions.

But the 1980 Sine-Saloum evaluation had far reaching effects. Rather than ignoring its conclusions and recommendations, the A.I.D. mission in Senegal and the

Government of Senegal immediately undertook a series of additional reviews and rapidly instituted corrective measures. Among the steps taken were a review of the project by Senegal's National Assembly, and the appointment of new project staff -- including a new Ministry of Health project director and a seasoned A.I.D. project manager. The project was then redesigned to incorporate the evaluation's recommendations:

- Opening of new health huts was delayed so that pending problems could be resolved, and expansion of the program into new departments was postponed indefinitely.
- A new management structure was introduced, which included better delineation of responsibilities and coordination of activities among U.S.A.I.D., the Ministry of Health and other participating organizations.
- Community level activities (particularly training for village management committees) were intensified to increase the villagers' understanding of the health program and their responsibilities for financing and managing village-level activities.
- Improvements were made in the drug resupply system. The system was decentralized, and the primary store of drugs for the program relocated to the regional capital (Kaolack), where an existing warehouse was renovated. A continuing policy dialogue concerning further measures to decentralize the drug system is underway.
- The system of fees and charges for village health services and payment of village health workers was reviewed and modified to increase the likelihood that the program would be financially viable, as part of a Senegalese approach to community participation called locally "autogestion".
- Training activities focused on improving the skills of Senegalese training staff.
- A.I.D. opened a project office in Kaolack, and an experienced, dynamic Senegalese project manager was hired.
- The Government of Senegal closed redundant health huts and new criteria were instituted for the selection of new health hut sites.
- Program administrators reduced the number of village-level workers to two; the matronne (traditional midwife) with maternal and child health responsibilities, and the secouriste-hygieniste (first aid-sanitation worker) who was to provide general preventive and curative care and promote environmental sanitation.

- Mobylettes (motor scooters) were substituted for horses and buggies.
- Supervision was intensified on an experimental basis in a sample of 60 of the 378 health huts.
- An improved reporting system was initiated. A record-keeping form was introduced for illiterate village health workers, based on a prototype developed for a Dutch-supported health program in Fatick.
- Retraining for village health workers was planned.
- Preventive health measures [including malaria prophylaxis for children under 5 and pregnant women; DPT and measles vaccination; a diarrhea treatment (ganidan); and oral rehydration and environmental health activities], were to be phased gradually into the program.
- An evaluation of the revised program was scheduled for one or two years hence; baseline health data were to be collected; and a health surveillance system was initiated.

III. SINE SALOUM REVISITED

In 1983 a proposal to A.I.D. by the Government of Senegal for a second phase of the Sine Saloum program provided an opportunity to review what, if anything, had changed as a result of the 1980 evaluation and subsequent design.

Since 1980 evidence has accumulated on the poor performance of primary health care programs around the world, and particularly in sub-Saharan Africa. The result has been increasing skepticism in A.I.D. and other donor organizations about the prospects for success of primary health care programs. The problems that seem to plague most programs - poor management, weak supervision and logistics, systematic underfunding of the health sector in general, and inability to sustain the recurrent costs of primary health care in particular - were writ large in Sine Saloum. Compared to more favorable settings in which PHC programs have fared poorly, Senegal, with its severe foreign exchange problems, budget deficits, staggering national debt, and relative dearth of natural resources, appeared an unlikely prospect for a viable PHC program. Moreover, the prevailing wisdom is that once a PHC program has raised the expectations of its potential beneficiaries but then failed to satisfy them, it is virtually impossible to resuscitate the faltering program.

Yet the inescapable conclusion of a review of the Sine Saloum project is that Senegal has succeeded in developing a prototype for a viable village PHC program. The balance of this paper describes the impressive achievements of the program, and discusses a series of unresolved issues and their implications for PHC programs worldwide.

IV. THE SINE SALOUM PRIMARY HEALTH CARE PROGRAM, 1983

A. Financing PHC in Sine Saloum

By 1983 primary health care services were offered in more than 370 villages in four departments of Sine Saloum, and villages are financing a substantial portion of the costs of primary health care services at the community level. Under the rubric of "autogestion", villagers are paying for medicines, are compensating community-level health workers (CHWs), and maintaining health huts. Financial viability has not come easily. Still unresolved is the issue of who should pay for the necessary central functions of the PHC program, such as training, supervision and logistics. Yet the degree of cost-sharing by consumers in Sine Saloum is rarely achieved in any PHC program, let alone in a sub-Saharan country. It has come about through a combination of political will and fiscal pragmatism, and through an understanding that community participation and community control of PHC can all be furthered by user payments for health care.

Various factors underlay the bleak financial prognosis for the health huts in 1980. One problem was competition from other Ministry of Health facilities, particularly health posts, that provided free medicine and treatment. Even as the Ministry of Health was attempting to levy charges for medicines prescribed by village health workers at the health huts, it continued to pursue a national policy of providing health services free of charge at the next higher level of the health system (the health post or dispensary). So it was not surprising that villagers often preferred to walk to the nearest health post for free care, rather than pay for the services in their local village. The result was that groups who were better off - those who lived in the larger towns or settlements in which the posts, dispensaries, centers and hospitals are located - got free care, while those on the socioeconomic periphery (rural villagers) were obliged to pay for their health care. The two-tiered system of health care was clearly inequitable, and it was fiscally unsound.

1. User Fees: The Ministry of Health subsequently instituted a uniform policy requiring user fees at all levels of the system. This was a politically charged decision that currently faces many ministries of health but which they have tended to avoid making. The Government of Senegal took a courageous step when it abandoned a system that had led many people to believe that free government health care was their right. The new policy of user payments was introduced first in areas where Ministry of Health-sponsored village health services had not previously been available with a carefully orchestrated campaign emphasizing community control of health care through payment for medicines and for the services of village health workers.

After the 1980 evaluation, the practice of charging an identical, fixed fee for each consultation which did not cover costs was abandoned. It was replaced by a system based on the real costs of medications. Charges for medicines are based on the actual costs of drugs. All payments for drugs and fees for services are deposited in the village health committee treasury, rather than going directly to the health workers as before. Recent analyses and site visits attest to the fact that users are regularly paying fees for medicines received. Village health worker logs show that fees are collected from clients at most visits and that the CHW's are collecting the correct fees. The money collected at the health hut (or by the trained village midwife for deliveries) is turned over to the treasurer of the village health committee. The treasurer is usually one of the elders in the community. Guidelines on the management of health hut funds state that the money should be deposited in a bank account, but this is not realistic in rural Senegal, and village committees generally keep the cash within the village. While villages are generally poor, they have in practice paid for services they value; only the fee charged by the trained midwife for deliveries appeared occasionally to exceed the ability of clients to pay. If a woman cannot pay the entire amount soon after a delivery, she may make informal arrangements to pay the midwife small amounts over time.

The progress during the past few years towards instituting a viable financing system is worth stressing again. User fees have become the key to a largely self-financing village PHC system in Sine Saloum. But user fees - largely fees for medicines - are not the only form of community financing in the Sine Saloum program.

2. Cash or in-kind contributions for construction, improvement and maintenance of the health huts: Villagers' contributions for the construction, maintenance and improvement of health huts seem to be reliable, and health huts are well maintained in all communities where CHWs are functioning. Health huts are constructed of local materials, modest

furnishings may be supplied by the community or by the Communaute Rurale.

3. Payment of village health workers: Local funds also provide payment for the village health workers, the CHW (paramedic), the trained midwife, and the sanitarian, if one is assigned to the village. Remuneration of village health workers has taken a variety of forms, and the experience here is less satisfactory than with payment for medicines. Visits to a number of health huts and interviews with PHC personnel reveal some variation in the patterns of remuneration from village to village. This might reflect either the differing values that villages place on health workers' services or the disparities in resources available in different villages. Some workers believe they are not receiving adequate payment.

Usually each household is asked for a contribution toward the workers' salaries. A survey conducted in 1982 found that most CHWs (90 percent) received some form of compensation, usually an annual payment, and they sometimes received payment in kind -- usually volunteer labor in the CHW's fields. In addition to cash payment, midwives may receive the customary lamb's haunch for performing a delivery.

4. Contribution to "Communaute Rurale": A national law requires that all villagers pay a head tax to the Communaute Rurale, the local government administrative unit that includes a series of villages (corresponding closely to the area covered by a health post). This money can be used to finance investment in local development projects and some operational costs of community activities. In theory eight percent of the Communaute Rurale funds may be used to finance health services. In recent years Rural Councils in Sine Saloum have allocated between 12 and 15 percent of their budgets to finance health services in their communities. Some of this money could be made available in the future to cover the costs of supervision of health huts by health post personnel; this policy is being discussed with the Government of Senegal.

B. Community Participation in the Sine Saloum Health Program: Village Management and Control

Community participation in the Sine Saloum primary health care program has two aspects: financing PHC and managing PHC (including PHC finances) at the village level. This section concentrates on the second critical aspect of community participation, village management and control of PHC operations. Community participation in and management of PHC services has become one of the most successful features of this program, and again distinguishes the primary health care program in Sine Saloum from other PHC programs.

In practical terms, community participation at the village level in Sine Saloum has evolved according to the general framework set out in a directive issued by the Senegalese Ministry of Public Health in 1980.^{1/} The Ministry directive recognized community participation and financing as the means for attaining the long-term objective of widespread health improvements. The community health committee would be the principal organ of support for the PHC program; villagers would be expected to pay for the PHC services; and the community health committee would have all responsibility for the collection and management of funds, including restocking of medicines. In short, the principal responsibility of the "participants" (villagers) was to ensure that the huts were self-financing.

The community health committee is responsible for construction and maintenance of the health hut. Its financial responsibilities include maintaining a ledger in which all payments and expenditures are recorded; establishing and publicizing prices for health services, deliveries, and medicines; and determining how village-level workers will be paid. The Ministry's directive also urged formation of a youth committee and an assembly, and these groups exist in most communities. How well they function will be the subject of future studies.

What form has community participation taken in actual practice? In 1980, community participation in PHC in Sine Saloum was limited; the village health committees, despite sincere efforts, were unable to keep the huts functioning. All this has changed dramatically in a little over two years. Today village participation takes a variety of forms:

1. Village-Level Committees

- a. Community Health Committee (Comitee de Sante)

Each of the 378 villages in which health huts and CHWs are located has a Village Health Committee. The principal function of the committee is to ensure the financial viability of PHC within the village. The members of the health committee are usually male villagers (although since the 1980 evaluation attempts have been made to increase the involvement of women and youths), and the officers (at a minimum a president and treasurer) are usually the respected elders of the village. In

^{1/} Many of these principles were established in an earlier project funded by another donor organization in Pikine, an area close to the capital of Senegal.

villages headed by a marabout (a religious leader) he may also head the village health committee. In addition to ensuring that financial contributions are made, the village health committee:

1. Ensures that health workers are responsive to villagers' felt needs.
2. Ensures that accurate financial records are kept for health hut receipts, that stocks of medicines are replenished, and that funds are not diverted.
3. Holds periodic meetings to review health hut management problems and village health problems.
4. Selects village health worker candidates.

The 1982 evaluation of the Sine Saloum PHC program showed that villagers' understanding of and participation in the health program had increased markedly in a two-year period. During the two years between the redesign of the program and 1983, all of the village health committees located in health hut villages had received training in health hut operation. Three-quarters or more of the committees were reported as meeting once a month or more; an even higher proportion of committees met regularly with village-level health personnel. Moreover, virtually all committees included members from peripheral villages (i.e., villages in close proximity to villages in which health huts are located), although it is not clear how actively these members participate in the committees. Nearly all committee members stated that the village owns the health hut and is responsible for its maintenance, for payment of the village health workers, and for replenishing drugs. This represented a marked increase in familiarity with and acceptance of local responsibility for health services compared with the feeble understanding of community participation found previously.

Comprehension of the villagers' roles and responsibilities in the PHC program was somewhat weaker among the villagers themselves than among the health committee officials. Least understood was their responsibility for remunerating village health workers and for payment for drugs. Moreover, a general pattern began to emerge: peripheral villagers' understanding of their responsibility for financing was much lower than among health hut villagers. Understanding was lowest among women in peripheral villages.

Analysis of villagers' actual financial and in-kind contributions to health huts and salaries of male CHWs shows that men contribute more than women, and hut villages more than peripheral villages. This pattern corresponded to the actual

utilization of PHC services in the health huts. It is not surprising that peripheral villages, often three to five kilometers from the hut village, should display lower utilization and participation, particularly if most committee officers are from the hut village and most meetings are held there. Still unanswered is the disturbing question of why women understand the program less, contribute less, and utilize it less. Two anthropologists who studied the program recently suggested that women may continue to rely on traditional health practitioners, possibly because they are more attuned to women's special health needs, culturally-defined roles, and traditional conceptions of disease causation and therapy.

b. Mothers' Committees (Committees des Mamans):

At least one important change in health committee representation was made during the past year. It had been observed that although women are in theory the principal clients of any PHC program (seeking services for themselves and their children), representation of women on village health committees was limited. To give women a greater voice in the program, the project director, a Senegalese midwife/health administrator, initiated women's committees in health hut villages. This development is intended to create parallel men's and women's community organizations, consistent with traditional village organization in Sine Saloum.

2. Other Key Organizations in the PHC Program

While the participation of villagers is critical to the success of the Sine Saloum program, so, too, is participation of traditional village leaders, government officials, higher level Ministry of Health personnel, and private sector sources of health care (i.e., traditional practitioners and private pharmacies).

The project has introduced seminars and workshops for government officials (particularly Ministry of Health employees) in the concept of primary health care and in their new responsibilities. Additional training was given to Ministry of Health and Promotion Humaine staff in community development and technical health skills. Local government officials, surveyed in 1982, generally felt that better coordination was needed among themselves, MOH field staff, project staff, and villagers. Nevertheless, as a group they were strongly supportive of the PHC program.

After the redesign of the project in late 1980, villagers (e.g., health committee members) received much more thorough education in the financial management of the huts. The work has paid off in villagers' improved management of the program.

3. Supervision and Support for Village Health Workers

How to pay for the continuing costs of supervision and support of village health workers is a major problem facing second generation primary health care programs. The costs of supervision include the salaries of the supervisory personnel and the cost of their transportation (vehicles, fuel, and expenses) for visits to outlying villages. While the government has until now assumed responsibility for supervisors' salaries, how to cover the cost of transportation is still unresolved. According to program officials, at a minimum it would be desirable for villagers to pay the costs of supervisors' transportation. One of the first changes in supervision in the Sine Saloum program after the evaluation was to abandon the supervisors' excessively heavy "deluxe" buggies in favor of motorscooters. While the recurring costs associated with the motorscooters may be higher, at least they are congruent with the supervisors' upward mobility aspirations, and they thus do use them much more.

A second measure was an experiment designed to test the improvements from more frequent supervisory visits to villages. All supervisors were instructed to visit CHWs once a month, but a selected sample of 60 health hut villages were visited twice a month. However, there appeared to have been no noticeable superiority in CHW performance, record-keeping, or any other indicators among those villages that received more intensive supervision. The effects of more intensive supervision should be studied more systematically to determine whether it is desirable.

A third measure designed to lower the cost of supervision was to abandon the policy of paying supervisors a supplement for each supervisory visit. A.I.D. initially paid the supplements, but when it became apparent that the MOH could not absorb the responsibility the policy was changed.

Much improvement in supervision is still needed. Recent site visits indicate that supervisors are still not visiting huts as often as they should, and some seem to lack the skills to assess and improve village health worker performance. One area that appears to suffer particularly from poor supervisory performance is the collection and compilation of health hut records.

In short, there is still ample room in this program for strengthening supervision.

4. Health Hut Medicine Supply

The 1980 evaluation expressed well-founded doubts about the capacity of the program to meet the huts' drug

requirements. One of the significant changes in the program has been the assignment to villages themselves of responsibility for resupplying the health huts with drugs. As a result, by 1983 most villages were self-reliant in maintaining an adequate drug supply. Supplies are replenished with funds collected for drugs by the village health workers. The village places its order through the regional government pharmacy, and arranges for transportation of the drugs from the health post level to the village. The cost of transporting the drugs is built into the price charged for them at the village health huts. Additional improvements in the central and regional pharmacy and drug logistics system are still needed, and are to be addressed in a recently approved World Bank project.

5. Improving U.S.A.I.D. Project Management

A new U.S.A.I.D. chief health, population and nutrition officer was hired, and additional staff employed to improve A.I.D.'s management of the health program. Previously, project supervision was centered in Dakar, the national capital. As part of the redesign of the project, the Senegalese midwife mentioned earlier was hired to set up a project management office in the Sine Saloum region. The small local staff included a training and communications specialist, a recordkeeper, and a deputy who had been a Peace Corps volunteer and staff member in the region. The locus of A.I.D. project management activities was thus shifted to the site, where the program could be better monitored and managed.

These changes have clearly improved A.I.D.'s ability to administer the program, and A.I.D.'s employment of Senegalese project staff has likely increased the program's responsiveness to local needs.

6. Record-keeping and Use of Health Information

Maintaining, collecting, and analyzing primary health care program records are problematic tasks in most PHC programs. The Sine Saloum program was no exception. The evaluation found that no baseline health survey had ever been conducted in Sine Saloum, and it would therefore not be possible to detect changes in health status which might be attributable to the primary health care program. In late 1982 an A.I.D.-sponsored survey in Sine Saloum collected baseline information on family health, fertility, and use of health services.

It became evident during the early stage of the project that although literacy was a criterion for CHW selection, many of the CHWs were in fact illiterate. As recommended in the 1980 evaluation, a new record-keeping form that was similar to the pictorial record forms, a version of the pictorial form

used in many other programs, was adopted for illiterate health workers. It was only partially successful in Sine Saloum, as revealed by site visits in 1983. The major problems seemed to be that health workers did not understand how to register visits according to different age categories nor how to aggregate information on visits on a monthly basis. Moreover, the form assumed that workers had command of numerical writing, which is not necessarily true, even if they are numerate. A variety of recommendations for improving the form have been made, and experimentation with record forms will continue.

A further problem not identified early on was the lack of data analysis and application of findings to improve program management. Records are now being collected and maintained in the project headquarters in Kaolack, but the data are not being used to document the program's achievements or deficiencies. It does not appear that anyone affiliated with the program has the combination of health administration and planning skills and time to analyze the data.

7. Expansion of the Sine Saloum Program

The 1980 evaluation concluded that expansion of the project into additional departments should be delayed. Thus activities in Phase I were limited to four departments, and plans made for a second phase of the project. In this next phase the existing framework of PHC activities in a fifth department will be reinforced, and the program expanded to the sixth and last province of the region.

8. Family Planning

Little progress has been made in incorporating family planning as one of the services available in the Sine Saloum PHC program. Inclusion of an effective family planning component is planned for Phase II, but before proceeding with service delivery, A.I.D. commissioned a survey to determine fertility patterns, desire for children, infant mortality, and current health and family planning practices in the Sine Saloum region. The full results of this survey, available in early 1984, will form the basis for planning a family health component for the PHC program.

9. Village Health Worker Attrition

High rates of attrition among village health workers were traceable to the selection of criteria used. The project initially encouraged villagers to select candidates who were literate. These candidates tended also to be younger and, because of their better education, more ambitious and upwardly mobile. They tended to abandon their CHW responsibilities when they left the village in search of more remunerative job

opportunities in the cities. More recently villages have been encouraged to choose more mature, well established villagers as CHWs, even though they may be illiterate. These CHWs have remained on the job longer, and the attrition rate has been cut dramatically (by 20 percent) during the 18 months subsequent to the redesign of the project.

10. Recurrent Costs

The final recommendation of the 1980 evaluation was that the recurrent costs of the program be calculated, and that the Government of Senegal be required to guarantee payment of those recurrent costs. As we have seen, rather than paying the recurrent costs of the program directly, the Government of Senegal has instead instituted policy reforms that have led to greater cost-sharing by clients.

11. Decentralizing Administrative Responsibility in the Health Sector

One of the objectives in the original project was to speed local autonomy in health by rapidly decentralizing responsibility in the health sector. As part of an administrative reform, functions that had been held very closely by the central Ministry of Health were delegated to regional authorities. Anxious to foster local independence, A.I.D., too, assumed a "hands-off" posture towards the project.

However, the 1980 evaluation concluded that this stance had contributed to the poor performance in the early stage of the project. The mission and MOH concluded that instead of decentralizing immediately it would have been preferable to involve central Ministry staff in the program, gain understanding and support, and then transfer increasing responsibility to regional and local staff. Central decision-makers need not be intimately involved in these programs, but they certainly cannot be ignored, since their commitment and support is critical to the project's success. Consequently A.I.D. and the Ministry of Health began to monitor the program more intensively, and the MOH appointed a project coordinator specifically for the Sine Saloum project.

V. UNRESOLVED ISSUES, NEW PROBLEMS

The achievements of the Sine Saloum program must be weighed against several issues and problems that are beginning to emerge as it develops. Ironically, it is only because the PHC program is functioning and functioning reasonably well in Sine Saloum that it is possible to look beyond issues of program viability to consider other, more subtle, problems.

A. User Financing: Meeting Demand But Also Meeting Need?

User fees have become the backbone of the Sine Saloum PHC system. But the effects of the reliance on user fees need to be considered. One result has been little demand for preventive health services. The mix of services originally offered at the village health huts in Sine Saloum was devised by the Ministry of Health to address pressing health problems. Over time certain services have "caught on", while for others there has been relatively little effective demand -- not because the health problems do not exist, but because the prospective clients do not wish to pay (do not perceive the need for?) these services. Examples of services for which there is a need, but little demand, include family planning, post-partum care, and nutrition surveillance and improvement. In general the non-clinical, educational activities -- those which are most likely to lead to behavioral change -- are most likely to drop out.

In Sine Saloum, providing mainly those services that clients demand and are willing to pay for appears to have led to a near exclusive emphasis on curative services. Apart from the prophylactic administration of chloroquine, preventive care is almost non-existent. Lacking are the kinds of activities -- education, outreach, surveillance -- that are necessary to effect the behavioral changes which in turn lead to long-term improvements in health status. There is a certain irony here: poor understanding of the causes of illness results in unwillingness to pay for health education and preventive health services. Hence there is a lack of demand for just those preventive services that might avert illness. The result is a program that provides largely curative services, which clients are willing to pay for, but may not address many of the underlying disease problems.

Preventive health activities are usually considered an essential part of primary health care, yet they require devotion of considerable time by CHWs to yield results, and they do not yield any immediate financial remuneration for the health worker or income for the village health hut treasury. Thus, one of the challenges in the second phase of the project will be the introduction of user-financed preventive health measures and services.

B. A Drug-Driven System?

User fees in the Sine Saloum program are in fact fees for medicines. A review of the records of several health huts revealed that everyone who is seen at a health hut receives not only a diagnosis, but a drug of some kind. Is everyone who sees a village health worker actually sick? And does every

person in fact require medicine? Are the diagnoses accurate? Are drugs misprescribed? Are fees for medicines an effective means of financing this system precisely because demand for drugs is unhealthily strong? What pressure does a village health worker feel in prescribing drugs? In short, to what extent does the fact that the Sine Saloum program is drug-driven have deleterious consequences for its clients? For health workers?

Most of these questions cannot be answered at this time. But their implications may be grave, and therefore they deserve further study.

C. Financing Supervision as Well as Services

One of the features that distinguishes the Sine Saloum PHC program from PHC efforts elsewhere is that health care services are self-financing at the village level. However, the costs of supervision are not included. One of the major issues that will be faced in the second phase of the program is how to finance some or all of the supervision costs while still pricing village health services at a cost that keeps them attractive to clients.

D. Care When Care is Needed Most?

Illness and malnutrition peak during the rainy season in Sine Saloum. Yet a quick review of utilization records indicates that there is no concomitant increase in the use of health care services during the rainy season. Why are people not receiving more services when they need it most? There are several possible explanations for this phenomenon.

First, utilization records reveal that some village health workers may neglect their health care responsibilities during the peak of the agricultural cycle, i.e., during the rainy season, because they must tend their fields in order to supplement the meager income they earn for providing health care. Second, villagers themselves may not be seeking treatment, even though they recognize that they need it, because they, too, cannot afford to take time out from their agricultural activities. Third, even if villagers needed and wanted health care at this time, they may be short of cash at this time of year because the income from the last year's crop has been expended and household stores of grain and other crops are depleted. The cause or causes for these utilization patterns should be determined and, if possible, measures be taken to ensure that people can receive care when it is most needed.

E. Male or Female Health Workers?

Male village health workers are trained to give much more comprehensive care than the female health workers. With few exceptions, female health workers are trained midwives, although most of them have received training in delivery of many of the basic primary health care services. Yet preliminary field visits and a review of records indicate that male health workers may be unavailable during a critical period of the year (the rainy season), and that during this time the burden of health care may fall on the trained midwives. Moreover, there appears to be some reluctance on the part of women to seek care from male health workers.

Although midwives are now getting more thorough training, this multi-purpose training should be continued during the second phase of the program, so that midwives (who, in contrast to male health workers, are more readily available in the community) can deliver the full range of primary health services. Moreover, many of the preventive functions that will be introduced during the next phase of the program are, in essence, maternal and child health care services, and these may be more appropriately and effectively delivered by female health workers.

F. Community Participation: Involvement or Acquiescence?

Designing PHC programs to include active community involvement has proven an elusive goal in many settings. A recent review of the Sine Saloum project by an interdisciplinary team of economists and other social scientists has raised a question about just how involved communities really are in the program. Their somewhat pessimistic assessment, based on a review of supervisory reports and interviews in two exemplary villages, is certainly not conclusive. Yet their findings tend to raise questions about client satisfaction with and support for the PHC programs that did not arise in the several surveys conducted in the project area. That is, the more encouraging survey results may not have detected a mismatch between the program's content and the perceived needs and preferences of prospective clients. Further investigation into the level and correlates of client satisfaction and participation would be extremely useful in improving utilization and support of the Sine Saloum program in future years.

VI. CONCLUSIONS

The Sine Saloum health program is one of only a handful of primary health care programs in the world that are successfully managed and financed by users at the village level. The viability of this program has been achieved through a willingness on the part of the villagers to shoulder both a significant portion of the costs of health care and the burden of managing the delivery of health care within their own communities. Community participation, a nebulous concept in many development programs, has taken on a concrete meaning in the Sine Saloum primary health care program.

This reassessment of a primary health care program several years after a very pessimistic evaluation has provided some important lessons that can be applied to primary health care programs in other settings. It has demonstrated that poor projects can be turned around. It has identified some of the policy and management measures, which, though difficult, are needed to effect these changes. And it has given ample justification for looking again, a few years from now, at what has become a very promising program.

What has caused the Sine Saloum project to turn from financial decline to viability, and thereby provide a basis for the continuation and expansion of much needed medical services? Clearly much thought and effort was devoted to restructuring the program to avoid problems encountered in the first phase. Government of Senegal commitment and political backing were crucial. Fundamental to the program's improved prospect for success, however, is the fact that villagers showed themselves ready and willing, despite their low incomes, to pay for services they valued when they are priced competitively; and they also proved ready to assist with community activities which correspond with their felt needs.

The competition of free services first had to be eliminated. But the national government also had to agree to permit village health committees to keep all their income, and manage their own affairs, with relatively little outside control other than standards for charges and keeping financial records, reinforced by periodic supervisory visits.

The major problems impeding financial viability of the Sine Saloum Rural Health Program - such as underestimation of charges required to replenish drug supplies - have been mitigated, and the program has a new life. Authorities who were previously unaware of the level of demand for health services discovered that demand is strong enough to sustain a system that at least covers the cost of drugs and village health worker salaries. However, daunting problems remain: Can supervision costs also be financed? Can the system provide

preventive as well as curative health measures? Can the system be redesigned to ensure that care is available and accessible during peak disease months? And, finally, can the PHC program be better molded to engender strong community involvement and utilization? All of these issues remain to be addressed in a second phase of the program beginning in 1984.

Table 1

Socio-Demographic Characteristics: Senegal and Sine-Saloum*

	<u>Senegal</u>	<u>Sine-Saloum*</u>
Population (1982 est.)	6,000,000	1,200,000
Land Area (km. ²)	197,000	23,620
Population Density (persons/km. ²)	30.5	51
Crude Birth Rate	48/1000	?
Crude Death Rate	23/1000	?
Previous Page Blank on Growth Rate	2.8%	4.0%
Infant Mortality Rate (1979)	116/1000	118/1000
Mortality Rate, Under 5 years	275/1000	286/1000
Life Expectancy at Birth	44	?
Fertility Rate (1980)	7.1**	?
Distribution of Ethnic Groups (1981)		
Wolof	36.0%	34.0%
Fulani	18.0%	8.0%
Serer	17.0%	43.0%
Toucouleur	9.0%	6.0%
Diola	9.0%	5.0%
Mandingo	7.0%	3.5%
Other	4.0%	1.0%
GNP per capita (dollars, 1978)	340	?
Adult Literacy Rate	27.8%	?
Access to Safe Water	37.0%	?

* From: Godfrey, H.R. and John D. Sexton, 1983.

** Senegal: Les Effets des facteurs demographiques sur le developpement social et economiques. Washington, D.C.: RAPID (The Futures Group), no date.

Table 2

Medical Facilities and Personnel
Senegal and Sine-Saloum

	<u>Senegal</u>	<u>Sine-Saloum</u>
Hospitals ⁽¹⁾	12	1 (8%)
Hospital Beds	35,323	268 (8%)
Health Centers (Dept. Hospitals)	35	9 (26%)
Health Center Beds	787	103 (13%)
Maternities	231	89 (39%)
Health Posts	448	83 (19%)
Maternal and Child Health Centers	65	10 (15%)
Physicians (2)	295*	18 (6%)
Nurses	2,482	293 (12%)
Midwives	381	25 (7%)
Population per Hospital Bed	1,278	2,929
Population per Physician	18,670	60,367
Population per Nurse	2,219	3,708
Child Bearing age Females per Midwife	3,447	10,392

(1) Includes Health Center Beds

(2) Includes 120 expatriate physicians (1979); excludes 118 private physicians.

Table 3

Principal Communicable Diseases, Sine-Saloum
1979 and 1980*

	<u>1979</u>	<u>1980</u>
Malaria	103,193	126,957
Gonococchal	5,910	4,061
Streptococchal Infections	4,946	12,638
Syphilis	4,945	4,603
Whooping Cough	4,321	4,028
Measles	3,935	1,995
Schistosomiasis	2,266	1,995
Chicken Pox	1,720	3,655
Flu	1,570	3,019
Mumps	1,482	1,705
Amoebiasis	-	2,978

* Most recent statistics available; based on reported cases compiled by Department of Statistics, MOH/GOS (1980) and from "1979 Annual Report on Health Statistics", MOH/GOS.

Table 4

Sine Saloum Total Reported Deaths, Malaria Cases and Deaths
by Age Group, Reported by Health Facilities - 1979

<u>Age Group</u>	<u>Total Deaths</u>	<u>Malaria Cases</u>	<u>Malaria Deaths</u>	<u>% of Total Deaths Due To Malaria</u>	<u>Malaria Case Case Fatality</u>
Under 1	635	12,764	11	1.7	0.09
1-4	169	23,508	42	24.9	0.18
5-14	185	27,481	33	17.8	0.12
15+	450	39,440	36	18.0	0.09
TOTAL	1,439	103,193	122	8.5	0.12

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