

Danfa Rural Health Project Evaluation

Ghana

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DANFA RURAL HEALTH PROJECT EVALUATION

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SEPTEMBER 1979

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**FINAL EVALUATION REPORT
ON THE DANFA PROJECT**

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1. HEALTH SERVICES

The goal of the Danfa Project was to assist the government of Ghana to extend and improve rural health and planning services in a rational manner.

To accomplish this, the Danfa Project was designed to improve the health and welfare of a rural population through the establishment of a rural research, demonstration, evaluation, teaching and service center. The intent was to determine the health status of the rural population in the Project Area and establish service models to address the specific needs of that population.

A health center was established at Danfa, and later, because of identified needs, three satellite clinics developed at Oyibi, Berecuso and Abokobi. Priority for care was given to mothers and children because of high morbidity and mortality patterns in this group and this objective was achieved as evidenced by the preponderance of infants, children and women of child bearing age receiving services. The volume of participants, however, given the staff limitations described, resulted in emphasis on curative care, rather than preventive care.

Primary care services were extended into the villages not only via the satellites, staffed by Danfa health center workers once a week at each location, but also supplemented by indigenous Traditional Birth Attendants (TBA's), Village Health Workers (VHW's), and Health Education Assistants (HEA's) trained by the Project.

Preventive programs were implemented in the target areas with varying degrees of success. The mass immunization program failed to reach its goal of 80% eligible children, however did successfully demonstrate multiple antigen inoculations to be more effective than previous single antigen schedules. The malaria chemoprophylaxis program proved to be more successful in school aged children where volunteers (teachers) were utilized than in pre-schoolers who had to be brought to the health centers or satellites for medications.

Environmental sanitation was not noticeably improved in the project area probably because of two factors: 1) scarcity of sanitary facilities, and 2) lack of behavioral changes and attitudes during the Project.

Although there were nutrition educational activities and distribution of food supplements to bring about improvements in the nutritional status of mothers and children, measurements were not taken to determine the impact of the program. Community participation in nutrition activities was shown to be greater where food supplements were distributed than in other activities, such as family planning.

Family planning services were extended in the project area by training all health care workers to provide information and service, thus increasing accessibility of services to rural residents. This resulted in an increase of family planning acceptors in the Danfa area and a decline in birth rate and general fertility rate.

Health education was recognized as an important and integral part of the Project's programmatic - research framework. Health education assistants were selected and trained and eventually became valuable resources for villages. There is evidence, based on the health practices survey, that because of their participation with the health care team, that some changes did occur in the target population. The initiation of group sessions enabled the health education program to achieve greater penetration of the target population at a lower cost.

A number of epidemiological studies were performed through this project, however, there was not always routine follow through to specific multi-disciplinary programs designed to meet identified needs. The project did document polio as a significant problem in the area which resulted in increased emphasis on polio immunization in the target area and later throughout Ghana.

2. TRAINING

Participant Training

The project proposed to train a critical mass of Ghanaian expertise in public health to assume full responsibility for planning, implementing and maintaining the rural health program.

Nineteen Ghanaians received a total of 22 training experiences in the U.S. (the majority at UCLA) during the life of the Project. At the end of the project, most of the participants appeared to have maintained their commitment to focus on the improvement of health care in rural Ghana, as evidenced by their roles in position with the Government of Ghana or Ghana Medical School. Their involvement in planning (National Health Planning Unit) as well as in service programs should assure the continued emphasis on primary rural health programs in Ghana.

Field Training - Medical Students

The Danfa Health Center was to provide clinical rural health training for Senior Medical Students.

From the inception of the Project, 50 senior medical students have received a three - four week training experience each year at Danfa. The plan is not only to continue this practice but to extend an additional week's training at a Government of Ghana rural health center.

Traditional Birth Attendants (TBA's)

TBA's were to be trained to perform safer deliveries, monitor women during prenatal period, recognize and appropriately refer high risk women and

complications, promote improved maternal and child health practices and family planning, accurately report all required birth information.

Since the inception of the program, 60 TBA's in Area I and 30 TBA's in Area III were trained and their activities closely supervised and monitored. There is indication that their improved services are effective, and further analysis of the outcomes of TBA care and deliveries should determine impact on maternal and child health.

TBA's were responsible for recruiting a substantial number of Family Planning acceptors in their villages and referring all prenatal patients and identified high risk cases into the health system for care.

A training manual for TBA's was produced as a result of these activities and has been disseminated and is being utilized in Ghana Ministry of Health programs.

Village Health Workers (VHW's)

The Danfa Project was to locate indigenous village volunteers in the Project Area to receive training to become VHW's in their own areas. They were to provide some basic services to community residents who experienced routine health problems between visits by representatives of the conventional health team. Training included recognition of problems, giving routine care, making referrals, basic health education, Family Planning and environmental sanitation.

A total of 20 volunteers completed training and were working in nine villages in the Project Area. Studies indicated that the VHW's in a 15-month period, January, 1977 to March, 1978, delivered 361 encounters per person. The services included preventive services including malaria chemoprophylaxis, and family planning referrals. The quality of care given by VHW's was not determined by the Project.

A training manual was produced by the Project, but the team could not determine whether the manual was in use in the MOH region.

Other Field Training

Ghanaians were to receive training in other fields related to the Project's research activities.

Approximately 200 individuals were trained as research assistants, ranging from 0-level to college level and many are now assigned to University of Ghana, Ghana Medical School, or awaiting the activation of the Noguchi Tropical Disease Research Center.

3. INSTITUTIONAL DEVELOPMENT

The project proposed to develop linkages with appropriate Government of Ghana agencies to effect the systematic flow of information from the project and to implement rural health care programs throughout Ghana.

The Policy Advisory Committee was initiated in 1975, which consisted of high level representatives of the Government of Ghana, University of Ghana, and USAID Mission. The committee met twice a year during the life of the project and has had one meeting since the project's termination during which was stated an intention to continue the relationship.

The Ghana National Health Planning Unit has in the past and now still anticipates utilizing Danfa Project information as a basis for its primary health care strategy implementation.

Timely processing, analysis and interpretation of all Danfa data is critical to this process. It appears that Ghana Medical School will have the capability of providing this necessary information.

Trained public health physicians and other specialists are available to assist in the development of Ghana Medical School's post-graduate public health training program, implementation of the primary health care strategy and activation of the Noguchi Tropical Disease Research Center.

The evaluation team felt that there was insignificant institutional development at UCLA as a result of the Danfa Project, in view of the fact that most Danfa advisors had dispersed by the termination of the Project, leaving little noticeable infrastructure to which the Ghanaians could relate.

The Project should be commended for its activities promoting village development committees. The establishment, activation and involvement of village development committees appears to be vital to the acceptance of rural health programs of this type in Ghana.

4. HEALTH SERVICES RESEARCH

As with some of the other operational research activities, the summative evaluation efforts suffered from delays in the analysis of data and the incompleteness of data analysis once presented. These delays greatly limited the policy formulation, service delivery modalities and credibility of the overall Project.

The major problems associated with the summative evaluation in specific activities were:

a) Village Health Survey

These data were extremely costly to collect and only limited use is made of them as an important indicator to assess the overall impact of the program in terms of change in health status.

b) Family Planning Survey

In the presentation of the family planning acceptance and continuation rates, the absence of age-specific rates and the total number

of eligible women make figures which show a significant increase in acceptors difficult to interpret and substantiate.

c) Health Practice Survey

Significant changes were reported in several health practice areas, e.g. - BCG Vaccination, adequate human waste disposal for children under six. At the same time, there were several changes opposite from those desired, such as smallpox and measles inoculation and adequate adult male human waste disposal. No adequate explanations were provided to account for these changes.

d) Survey and Registration of Vital Events

The substantial migratory turnover in the Project Area made questionable the results and the methods utilized.

e) Data Comparability, Accessibility, and Utilization

There is evidence of differences in population structure and demographic characteristics of the four project areas. No data were available to determine the extent to which project areas represent typical Ghanaian rural communities.

For all practical purposes, the data were not, and at this time still not readily accessible. Data documentation was still in process and plans are being made to archive the data.

The results of data utilization by significant others are clearly mixed. Some of the operational studies and impact studies did in fact influence development of policy and implementation of strategies in Ghana's Ministry of Health.

The Danfa Project was indeed a complex, expensive and ambitious one. While it is difficult to ascertain the total value of time, effort, and dollars invested, the team felt in some areas the Project achieved unquestionable success, notably in the extension of primary health care services to the target area villages, participant and in country training and Ghanaian institutional development.

The evaluation team was however, extremely concerned about the inability of the Project to complete their summative evaluation activities which would have gleaned valuable information to determine the impact of the Project on the health status of the target population. Until such time as the final interpretation of data is provided, the Government of Ghana will be severely handicapped in its health planning and primary health care strategy implementation.

SUMMARY OF RECOMMENDATIONS

Health Services Delivery

- That additional first level nurses be assigned based on utilization patterns.
- That trained village health workers be considered for service at the health center level of the satellite to screen patients and provide first-line routine care, thus freeing nurses and the health center superintendent to care for more complicated problems.
- That infants be required to return monthly for surveillance (well child care) for first 6 months or 1 year, and annually thereafter.
- That additional enrolled nurses and village health workers be added to the teams at the health center and satellites based on utilization patterns, so that comprehensive care could be provided to older children and adults.
- That specialized multidisciplinary programs be developed for the control of diseases prevalent in the program area.
- That further studies be conducted to determine efficacy of malaria chemoprophylaxis program.
- That the community development specialist together with health educators determine effective means to penetrate adequately the target population with malaria chemoprophylaxis and mass immunization programs.
- That community development specialist and health educator focus on methods of effecting behavioral changes concerning environmental sanitation.
- That satellite clinic development with services focusing on prevention and health education be supported.
- That a system of routine monitoring of drinking water sources by laboratory testing be implemented.
- Continued support for planning and implementation of Ghana Primary Care Strategy.
- Projects should be allowed more freedom in designing service models.
- Environmental health programs should include assurance of the provision of certain basic sanitation facilities before embarking on intensive education programs.
- Epidemiological studies should be performed only with the intention of devising plans to deal with the identified problems.

- Successful methods utilized in the project should be applied elsewhere in the program, if appropriate.
- Volunteers should have been considered for distribution of malarial suppressants to preschoolers, since they had demonstrated effectiveness in reaching school age children.
- Attendance schedules for well-child surveillance visits should have been adjusted to be more realistic.

Family Planning

- That all health service personnel be trained to participate in family planning education and service as an integral part of their routine duties.
- That the family planning "Manual 'A' and 'B'" be more widely circulated and its use encouraged in all regions.
- That family planning be incorporated into all comprehensive health programs.
- That contraceptives not be available for sale through commercial vendors, but that contraceptives be made available at convenient locations at no cost to acceptors to eliminate any barriers of continued use.
- That linkages between the Ministry of Health Family Planning Section and the Ghana National Family Planning Program be continued.
- That all AID projects involving family planning incorporate a research design to identify and analyze the unwarranted side effects of the contraceptives used.
- That AID give priority consideration to funding those family planning activities which are developed as an integral component of health service programs.

Health Education Program

- That the Danfa Project continue its emphasis on designing and implementing health education activities that would lead to appropriate and desired behavioral changes.
- That the Danfa Project restate its general goals in behavioral terms for programmatic and evaluation efficiency and to be consistent with its present emphasis on behavioral change.
- That serious consideration be given to designing alternate means for selecting HEAs.
- That a study be conducted to determine present training needs of HEAs (consistent with any other changes that might be made in the program)

- that would influence the time required to provide such training.
- That training programs for HEAs should be modified as appropriate and be provided for non-health education staff.
 - That the project continue to provide a high level monitoring system to ensure a balanced health education program based on village needs.
 - That personnel-training consultants be involved in redesigning the job responsibilities of the HEA.
 - That the Danfa Project and the MOH work with the Ghana Establishment Secretariat (Civil Service) to determine appropriate personnel categories for HEAs at the village level.
 - That the program continue to develop the service-oriented administrative model in all areas of the Danfa Project.
 - That administrative developmental efforts be conducted in cooperation with the MOH to ensure ease of replicability.
 - That the HEAs continue to serve as human service resource for village leaders.
 - That the HEAs concentrate more on the community development approach in designing and implementing health education activities.
 - That an appropriate operational evaluation and feedback mechanism be designed as an integral part of the health education program.

Evaluative Research

- The amount of data collected should be limited by the host country's manpower and data processing capability.
- Projects require greater interdisciplinarity to assure initial objective.
- Training of Ghanaians should have exceeded the requirements of the MPH core, with participants trained in epidemiology, economics, management and basic health service research skills.
- To assure substantive involvement of MOH and thereby facilitate the transfer of findings into policy, the MOH should be a formal co-signer/participant of the project.
- The project could have used less expensive technical assistance; four UCLA faculty in residence is excessive--even for a project of this size and scope.
- AID/G should award grant to GMS/MOH-Planning Unit to facilitate the analysis of Danfa Project data and to help resolve critical planning questions associated with the developing program in primary care.

- The development of a more detailed PROP with the inclusion of a causal network statement.
- Project staff (both UCLA and Ghanaian) should be requested to redraft the final report.
- AID should obtain clean data tapes from UCLA and run data to determine whether data is adequately documented.

Costs/Cost Assessment

- Subsequent demonstration efforts should establish clear objectives with guidelines at the onset of the project to achieve measures of cost effectiveness on demonstration and research projects.
- Subsequent demonstration efforts should establish monitoring mechanisms to measure goal/objective achievement.
- Research at AID or through subcontract should attempt to review available data/working papers of the project to determine retrospectively the degree to which this project was truly cost effective.
- USAID through subcontract retrospectively review cost of operation between Areas I, II and III to determine costs of each area providing varying levels of service.

Participant Training

- That future AID projects involving participant training encourage more specialized training appropriate to the specific needs of the host country.
- That future AID projects involving participant training encourage provision of strong administrative and faculty support at the university on a personal level similar to that given by UCLA in this project.

Training--Ghana

- That the continued clinical training of senior medical students in the Danfa Program and other comprehensive rural programs be supported.
- That the medical students have opportunities during their rural health training program to participate in community development and health education programs.
- That AID continue to fund the Community Health Team Support Project and encourage the further developmental activities of the GMS as it relates to rural health services research/demonstration and training projects.

Traditional Birth Attendants

- That further analysis of the outcomes of TBA care and deliveries be considered prior to extension of TBA training in other areas.
- That TBAs trained to date (by Ministry and Danfa Program) be given the necessary administrative and professional support necessary to maintain and utilize their new skills.

Village Health Workers

- That services provided and referrals initiated by VHWs be closely supervised by health center team members.
- That a study be undertaken to determine the appropriateness of care given by VHWs.
- That results of above activities and identification of deficiencies influence the topics of discussion at future refresher courses which should be reinstated as soon as possible.
- That professional support be available through a strengthening of linkages with the organized health care system serving the villages.

Program Continuation--Danfa

- That linkages between the Government of Ghana and the Ghana Medical School, Department of Community Health (Danfa Program) not only be continued, but strengthened.
- That the University of Ghana, Ghana Medical School complete the analysis and interpretation of the accumulated data from the project on a timely basis and make findings available to the Ministry of Health's planning unit.
- That the Ghana Medical School and Ministry of Health continue to build the existing positive working relationship that has developed using the unique but interdependent resources in a concerted effort toward providing a comprehensive health care delivery program that reaches the majority of Ghanaians.

Linkages with Other Agencies

- That ISSER be required to fulfill the aims of their Danfa contract to analyze socio-economic data, or if not, submitted by the time the Wang Computer is installed at GMS.
- That the data be returned to GMS for processing, analysis and interpretation.

- That linkages with relevant Government of Ghana agencies be continued and strengthened wherever possible.
- That key Danfa staff and high level hospital representatives develop mechanisms to ensure feedback of pertinent patient information and referrals.
- That, upon completion of the analysis and interpretation of the accumulated Danfa data, findings are promptly disseminated to all relevant agencies.
- That the Danfa program continue to relate to a multiple relevant agency advisory committee.

UCLA Institutional Development

- AID design subsequent long-term contracts involving U.S. universities in such a way to ensure that resident advisors are selected the tenure faculty--or that resident advisors be given tenure track positions at the termination of the project. This will ensure the development of a "critical mass" for subsequent projects.

Project Management

- Establish clear responsibility of each party to the contract.
- Establish USAID responsibility for monitoring activity in project documents and contracts.
- Establish clear goals and objectives.
- Establish a critical path analysis and use this as a guide to assess project achievement.
- Establish an ongoing reporting mechanism which reflects the degree of goal/objective accomplishment in measurable terms.
- Establish thresholds which will require an indepth analysis of problems when expected results are not achieved.
- Establish a method for assurance of continuity by USAID in monitoring--particularly long-term projects.
- Establish priorities for funding which will maximize the use of available resource in developing countries. Consideration needs to be given to sector planning such that the cumulative results of developmental activities will have a significant impact on the overall welfare of the country.

1. INTRODUCTION

The objective of this evaluation was to provide a comprehensive review of the Danfa Project and thus provide an opportunity to translate experience into lessons for future project development and implementation. To meet this objective, the evaluation focused on specific project activities, the management and the relationships of the key parties (GMS, MOH, UCLA, AID/W, and USAID/G), as well as the overall operation of the project. Particular emphasis was given to the activities and relationships since 1975.

Why evaluate Danfa? Two reasons were important in the selection of the Danfa Project for such an extensive evaluation. First, it was one of the largest long term projects funded by AID. Originated in 1970, the project ended in 1979 at a total cost of \$6.3 million. Second, and perhaps most important, was the comprehensive nature of the project. Encompassing training, research, services and overall institutional development, the Danfa Project was envisioned as a potential prototype for the future development of rural health services in Ghana and other developing countries.

Phases of the Danfa Project

The Danfa Project may be divided into two phases. The first operated from 1970 to 1975. During this phase the project was guided by an overall conceptual design in which three areas were designated as

experimental and one as a control in the provision of rural health services.

The scope of services provided in these four project areas were designed to test certain hypotheses concerning the most cost-effective way of delivering family planning (FP) services. The service components in each of the four areas are shown in the table below.

Table 1. Scope of Services Provided

Area	Comprehensive Health Care	Health Education Program	Family Planning Program	Standard MCH Services
I	Yes	Yes	Yes	Yes
II	No	Yes	Yes	Yes
III	No	No	Yes	Yes
IV	No	No	No	Yes

The services offered in each of the four areas were based on the following assumptions and arguments:

Area I: Couples would accept family planning more readily if convinced that the children they now have are more likely to survive. Hence family planning programs should be an integral part of a comprehensive health services delivery program.

Area II: Comprehensive health services are costly to implement and maintain and to insist on their presence would delay implementation of family planning services. Moreover, many of the benefits of a comprehensive health service

could be achieved by including health education in a family planning program.

Area III: Simply making family planning (FP) services available would facilitate favorable change without concern for special health service or health education programs.

Area IV: Fertility reduction is primarily dependent on improved socio-economic conditions and on an expanded education program. As levels of education improve, couples will seek family planning services without the need for specific services.

The second phase began after the 1975 APHA evaluation which eliminated the experimental design and realigned priorities to emphasize training, operations research, epidemiology and institutional development.

Evaluation Methodology

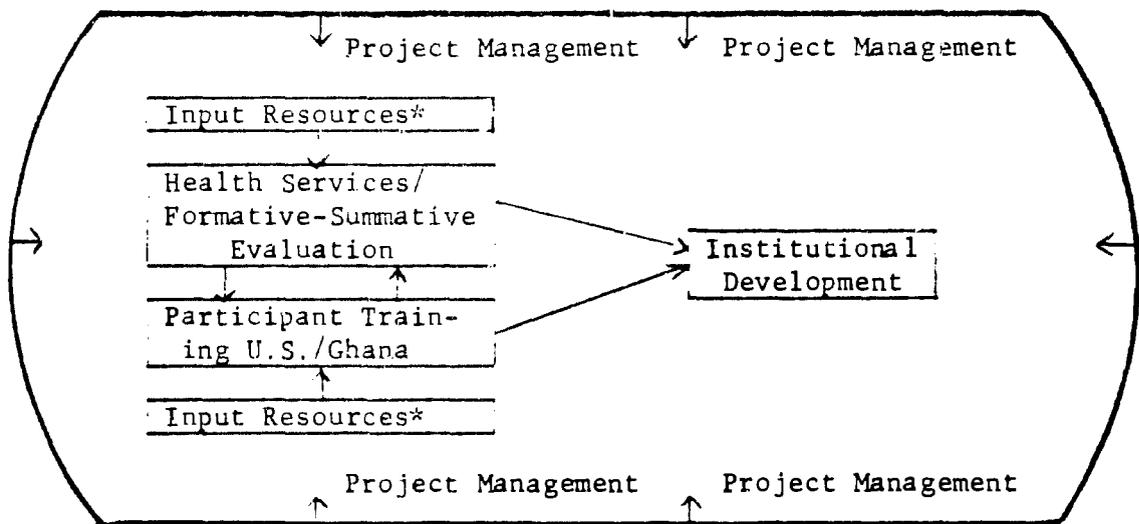
Always a difficult and complex task, retrospective project evaluation is particularly complicated for a project as lengthy and as extensive as the Danfa Project. To be as comprehensive as possible, the evaluation team developed a scheme that builds upon the basic elements of the AID "log frame" methodology while also permitting more substantive judgment about the various activities that emerged during the course of the Danfa Project. The procedure is outlined below.

1. Project goals, purposes, activities and outcomes were identified as well as measures associated with each of these elements. These components of the project were obtained from an extensive reading of the 1970 and 1975 PROPS.

Numerous papers and reports were reviewed as well as lengthy discussions with key project participants. The major purpose of the Danfa Project centered in three substantive areas:

- (a) health services delivery and evaluative research;
- (b) participant training; and
- (c) institutional development.

In addition, these activities operated within a context we have termed project management. The relationship of these major activities operating as a whole, is presented in Figure 1.



* Input resource includes dollars, counterpart funds, personnel, materials, space.

Figure 1. Relationship of Major Project Activities

2. Each of the four activities--health services/evaluative research, participant training, institutional development, and project management--were reviewed in great detail to use the explicit goals, purposes, outputs and inputs as criteria for project assessment. Below is a description

of the procedure used in each area.

Health Services Delivery--Evaluative Research

The Danfa Project provided a unique opportunity to assess various types of delivery services and to demonstrate the feasibility and impact of these services using various indices of health status, behavior, and operations. To evaluate these activities and their respective research component, the following steps were taken:

- Specific identification of service inputs and the extent to which the inputs meet the criteria of adequacy, effectiveness, appropriateness, efficiency and transferability to the rural Ghanaian setting.
- Since one of the objectives of the project was to demonstrate the effectiveness of various service inputs, the project embarked on an extensive data collection effort. In essence, the project through its data collection efforts conducted both "formative" and "summative" evaluations. Formative evaluation is designed to aid in the development of program activities during the life of the project. Summative evaluation judges the worth of the various activities after they have been in operation (Scriven, 1973).
- Various types of analyses were classified as either formative or summative evaluation. Formative evaluation activities included basic epidemiology studies as well as various types of operational research activities involving cost, task analysis, utilization, and quality assessment. Summative evaluation focused on impact. In keeping with the overall project design,

* Scriven, M., "The Methodology of Evaluation," in Weiss, C.H. Evaluating Action Programs: Reading in Social Action and Education, (Boston: Allyn and Bacon, Inc., 1973).

impact was defined to involve changes in health behavior/ practice and health outcomes such as mortality and morbidity. This approach permitted the identification of specific analyses and how they affected operations. It also identified gaps in which specific studies should have been done for the various service areas.

--Each type of health services delivery/research activity was further divided into the following elements: problem definition, design and measurement, data collection, data analysis and interpretation of findings. Each area was assessed according to the following generic criteria.*

--appropriateness--the importance of specific problems selected for resolution and the relative emphasis or priority accorded to each.

--adequacy--the proportion of the entire problem program activities are attempting to resolve.

--effectiveness--the extent to which pre-established objectives are attained as a result of program activities.

--efficiency--the cost in resources of attaining program objectives.

--transferability--the extent to which project findings and/or approaches can be used in other settings.

* Definitions of appropriateness, adequacy, effectiveness and efficiency are based on the work of Deniston, O.L., I.M. Rosenstock and V.A. Getting, "Evaluation of Program Effectiveness," in Schulberg, H.C. (ed.) Program Evaluation in the Health Fields (New York, N.Y.: Behavioral Publications, 1969).

Participant Training and In-Country Training

Two basic types of training activities were considered: participant training and in-country training. This latter category was further divided by type of personnel--medical students trained at Ghana Medical School (GMS), traditional birth attendants, village health workers, and other personnel, e.g., research assistants. Each type of training was examined in terms of its selection process, training-curricula and current employment status of trained personnel using the five criteria defined above.

Institutional Development

Institutional development is a general term usually defined as the capability of institutions (both U.S. and the host country) to function better as a result of participating in the project. While a difficult concept to operationalize and assess because of the complexity of the Danfa Project, i.e., its service, research and teaching goals--as well as the unexpected political-economic problems of Ghana, several critical elements of development were selected and examined: program continuation following project termination, linkages with other agencies, data processing and analysis capability and the in-house capability of UCLA for subsequent activity. Again the five general criteria previously defined were used as an overall framework.

Project Management

Management affects all aspects of project activities--health services/evaluation; training; and institutional development. The evaluation considered each of these areas in terms of goal compatibility, divisions of responsibility, decision-making structure and reporting

procedures. Again the five general criteria were used as a general assessment framework for assessment.

Report Format

The report covers the four areas as follows:

- (a) Health Services Delivery--Evaluative Research
- (b) Training
- (c) Institutional Development
- (d) Project Management.

The findings in each of these areas are presented in the following format:

- Project Description: Purposes/Goals/Inputs/Outputs
- Critique
- Recommendations

2. HEALTH SERVICES DELIVERY--EVALUATIVE RESEARCH

A. Health Services Delivery

According to the first Danfa Project Paper (1970), the overall purpose of the project was to improve the health and welfare of a rural population through the establishment of a rural research, demonstration, evaluation, teaching and service center.

The Danfa Health Center began providing services in 1971 at a facility constructed on a site contributed by the Danfa village and located near the village 20 miles north of Accra. The area was typical of other rural Ghanaian communities in that there were high levels of infectious diseases (malaria, measles, tuberculosis, neonatal tetanus, parasitism), high infant and child mortality, high maternal mortality, and inadequate organization of the existing health care system.

During the first four years of the project, the four-cell research design testing acceptance of family planning included the Danfa area as Area I. Family planning services were included as an integral part of the comprehensive health care program based at the health center.

After an external evaluation of the project in 1975, a second Danfa Project Paper was drafted and approved which discontinued the four-cell, family planning/health education/comprehensive health care hypothesis testing. Health center activities after 1976, according to the 1975 PROP, were then designed with the goal of enabling the government of Ghana to extend and improve rural health and planning services in a rational manner.

The program was to investigate the state of health in a rural community, develop operational models for the delivery of health and family planning services, and provide rural field training for doctors and other health workers. The health center was to serve as a vehicle to achieve the ends described.

Between 1970 and 1971, all services were provided at or out of the Danfa Health Center. When it was determined that distance from the health center was a major factor affecting use, satellite clinics were established at three locations within Area I, at Oyibi, Berekuso, and Abokobi. These satellites were planned as outreach extension services of the health center and a team of Danfa staff members was assigned to them on a once-a-week basis. It was understood that not all program services would be available at the satellites, and the Danfa center would serve as their backup facility. Referrals were made from satellites to Danfa Health Center and Korle Bu and other area hospitals and from the Danfa Health Center to Korle Bu Hospital.

Area II had a health facility in Amasaman staffed by missionary nurses providing curative care and maternal and child health care (MCH) alone. Danfa Project health education, family planning and immunizations were also available to area residents.

Area III was served by a Ministry of Health post at Obom which offered MCH/FP, antenatal, delivery, postnatal and curative services, and family planning. Since 1975, Danfa Project health education assistants provided services to Area III.

Health Center and Satellites/Staffing

A member of the Ghana Medical School, Department of Community Health faculty served as medical officer for Region I (Danfa Area).

The health center was supervised by a health center superintendent, a qualified nurse with additional training who examined and treated patients with medical problems, made referrals, managed in-service training activities, and ordered supplies.

Community health nurses examined and treated MCH patients, made home visits, and participated in training, education and school health programs, and community surveys.

Midwives managed routine antenatal, delivery and postnatal patients and their infants (more recently the combination of community health nurse-midwives were assigned who could serve both roles) aided by midwifery assistants. Both groups participated in health education activities. One enrolled nurse was assigned to assist in providing health services.

A health inspector assisted in village environmental sanitation programs and participated in health education programs.

Health education aides were assigned. Support personnel included a laboratory assistant, medical records clerk and dispensing assistant.

The satellite clinics were each served by one or two rotating teams deployed from the Danfa center, including the health center superintendent, community health nurse, midwife, midwifery assistant, and health education aides.

In the field trained village health workers (VHWs) and traditional birth attendants (TBAs) provided routine care, making referrals to the health center and hospitals. Supervision was provided by health center staff.

Health center and satellite activity supervision was provided by specialists in public health nursing, maternal and child health, family

planning and health education at the Ghana Medical School, Department of Community Health.

Critique

The composition of the team at the Danfa Health Center appeared to be appropriate for providing primary health care services, given the degree of professional support provided by the Ghana Medical School.

The health center superintendent was well trained, competent and directed the center in an orderly manner. The fact that he lead the team at the center as well as the satellites and received and made referrals enhanced the continuity of care provided to patients.

At all locations, staff communicated with patients in their native language and appeared to relate to them in a sensitive manner.

Health center staff were providing family planning services, eliminating the need for a FP team.

Effective supervision of TBAs and VHWs was enhanced by the regular assignment of health center staff to the satellites.

The volume of maternal and child health and acute care patients presenting for each session at the center as well as the satellites appeared to limit the comprehensiveness of care offered to patients.

Recommendations

- That additional first level nurses be assigned based on utilization patterns.
- That trained village health workers be considered for service at the health center level of the satellite to screen patients

and provide first-line routine care, thus freeing nurses and the health center superintendent to care for more complicated problems.

Program Activities

Danfa Health Center. Infants and children up to 36 months were expected to return monthly for surveillance (Morley). Services provided to the age group under 5 included history, physical examinations, immunizations, curative care, malaria prophylaxis, and nutrition supplements.

Children over 5 received immunizations and curative care.

Women of child-bearing age were provided with family planning services, prenatal, delivery, postnatal care (including immunizations, history and physical examination), and curative care.

Family planning services were offered to males; other adults not requiring above services received curative care only.

All participants were provided laboratory services as required, health education (including environmental health education and services), nutrition education, agricultural extension services, and medications as required.

Combination maternal and child health clinics were provided on a daily basis at the Danfa Center.

Appropriate referrals were made to hospitals in particular to Korle Bu Hospital. A referral form which was sent with the patient was returned to the health center staff with pertinent information. Health center nurses contacted or visited hospitals for information concerning diagnosis and recommendations.

Satellite Clinics. Adult, maternal and child preventive and curative care similar to that described as given at Danfa Health Center were provided. Referrals were made to the health center and to hospitals as indicated.

Field Activities: TBA Service. Trained TBAs provided the following services (a) referred suspected antenatal cases to the Health Center for examination; (b) performed routine deliveries; (c) recorded specified birth information; (d) offered family planning education; and (e) referred of high risk and problem cases to health center or hospital.

Malaria Prophylaxis. Distribution of antimalaria prophylaxis (Pigimethamine) to children 6 to 10 years of age was effectively accomplished by using village volunteers, usually teachers. Children under 6 years received prophylaxis at the health center and satellites when they were brought in.

Mass Immunization. A two-dose annual cycle was implemented in which children received DPT, OPV, BCG in first year and DPT, OPV, measles and smallpox vaccination the second year. Fill-in doses were given at the health center.

Environmental Sanitation. The health inspector, working with the village leaders through the village development committees attempted to receive problems of environmental hazards contributing to the health problems of the areas. Emphasis was placed on providing safe water, improved excreta disposal, refuse disposal, vector control, and housing.

Critique

Danfa Health Center and Satellites. Because of their high mortality and morbidity rates in rural Ghana, women of child-bearing

age and children under 5 were given a high priority for health services and, accordingly, received more comprehensive care than others. Observation of clinic patients revealed that few were male or elderly, indicating that the service was mainly attracting mothers and children.

The requirement that infants be seen at monthly intervals until the age of 36 months was not being met. Children appeared to be brought in regularly, as recommended, during the first few months of life but rarely seen after that age except for specific curative care.

The volume of acute care patients attending the center and its satellites together with the limited manpower available for service precluded the delivery of comprehensive care (history, physical examination, diagnostic studies, chronic disease control, and rehabilitative services) for all patients being seen.

Although referral mechanisms have been described, records containing information concerning diagnosis and recommendations were not routinely received by health center staff initiating the referrals. The same was true of referrals made by TBAs to hospitals. Continuity of care was seriously affected by this situation.

Numerous epidemiological studies were performed to identify the incidence and prevalence of certain conditions in the population served. These studies not only took time away from the delivery of health services they did not result in special programs designed for the control of those specific health problems which were identified. Examples of such studies were parasitic infections, inguinal hernia, epidemic pyoderma, gastrointestinal infections, leprosy, periodontal damage and endemic rabies.

The program missed the opportunity to study the impact of multidisciplinary control programs.

Malaria Chemoprophylaxis. Children seen in the clinics with fevers of undetermined origin were presumed to have malaria and were given antimalarial therapy on that first visit. This practice may account for the unusually high number of reported visits for malaria, since this figure included cases unconfirmed by laboratory diagnosis.

Malaria chemoprophylaxis was given monthly rather than weekly in this program so that severe attacks would be prevented and parasite density reduced, yet children could develop naturally acquired immunity.

The program fell far short of its goal of reaching 80 percent of the area children, primarily because of failure to reach pre-school children under 5 who had to receive prophylaxis at the health center or satellites.*

Blood survey studies of participants and nonparticipants in the Danfa Health Center indicated lower indices (spleen rate, parasite rate, parasite density) in the treatment area, Area I, compared with Area II, indicating effectiveness of the control program as planned. A missed opportunity was identified: volunteers or community workers could have been used to distribute anti-malarials to pre-schoolers, to effect greater penetration into the target population.

* School age children were given malaria suppressant tablets by volunteers, usually teachers. Pre-school children had to be brought to the health center for this treatment, therefore, coverage of this group was not as complete.

Mass Immunization. The program fell short of its goal of reaching 80 percent of eligible children to effect hard immunity in its mass immunization programs. In Area I in 1974 (-76), they reached only 51 percent and in 1977, 36 percent in Area II and .8 percent in Area III.

Multiple antigens were given in two groups annually with a fill-in DPT and polio at the health center for those children under age 1. This schedule eliminated the need for mothers with children to make frequent visits to facilities for the single or limited combination antigens.

Because of the high number of susceptible children in the program area, preventable communicable disease continued to be a major problem.

Mass immunization programs had been curtailed because of the lack of suitable equipment in working order (ped-o-jets), immunizing agents, and transportation problems.

Missed opportunities were identified--in view of increased incidence of measles during project term:

- (a) serologic testing of children for antibody formation to evaluate the effectiveness of immunization programs.
- (b) testing of the "cold chain" and the potency of various immunizing agents at the delivery point.

Environmental Sanitation. The Danfa Project can take credit for stimulating the constitution of village development committees. The health inspector and health education assistants worked with the village leaders to educate the committees in environmental health, convince them of critical needs, and assist in the correction of problems. In villages served by the health inspector, demonstration pit latrines were built; however, they were not adequate in number of conveniently located

for all, so they were not consistently used. Observation in the villages and at the health center and satellite locations revealed children urinating or defecating on the ground upon which many bare feet travelled, often in the presence of their mothers, indicating a lack of significance attached to such practices.

There was no program designed to determine total needs of a community (in terms of sanitation facilities) or funding to assist in the construction of such facilities. Health education programs therefore were necessarily hampered in the absence of adequate human waste disposal system.

Piped water had been brought into some of the rural areas in the project; however, there are frequent breakdowns of the system. When it was operating, it was reported that families used the piped water for some purposes, but still preferred and used unsafe sources for drinking water. Laboratory testing of common water sources was not routinely performed.

Refuse disposal sites were being used as recommended in some areas. The health practices survey indicated a slight increase in the use of these disposal sites between 1973 and 1976 in the project area.

Recommendations

- that infants be required to return monthly for surveillance (well child care) for first 6 months or 1 year, and annually thereafter;
- that additional enrolled nurses and village health workers be added to the teams at the health center and satellites based on utilization patterns, so that comprehensive care

- could be provided to older children and adults;
- that specialized multidisciplinary programs be developed for the control of diseases prevalent in the program area;
 - that further studies be conducted to determine efficacy of malaria chemoprophylaxis program;
 - that the community development specialists together with health educators determine effective means to penetrate adequately the target population with malaria chemoprophylaxis and mass immunization programs;
 - that community development specialist and health educator focus on methods of effecting behavioral changes concerning environmental sanitation;
 - that satellite clinic development with services focusing on prevention and health education be supported;
 - that a system of routine monitoring of drinking water sources by laboratory testing be implemented.

Recommendations: Beyond Danfa Project

- Continued support for planning and implementation of Ghana Primary Care Strategy. The Danfa Project provided the first step in the development of a comprehensive primary care program. The experience gained and data collected will facilitate the implementation of the proposed primary care program.
- Projects should be allowed more freedom in designing service models. The composition of the health teams used by the project was,

by design, the same as that used by Ministry of Health programs. The original research concept allowed for no flexibility for the reason that programs and services should be direct transferable to Ministry of Health locations. Has this constraint been removed, the project would have been able to assign staff based on utilization patterns and to experiment with various team models to demonstrate greater efficiency in providing basic services.

--Environmental health programs should include assurance of the provision of certain basic sanitation facilities before embarking on intensive education programs. Manpower and construction funds were not available either through the project or through the village development councils to provide a good environmental health program. An isolated pit latrine, or even several, in a village of 1,000 or more residents together with limited hand washing facilities is hardly adequate to bring about realistic changes even with an intensive health education program.

--Epidemiological studies should be performed only with the intention of devising plans to deal with the identified problems. The project carried out numerous epidemiological studies which identified area health problems. In the case of polio, awareness of the problem resulted in more intensive polio immunization programs. There should have been specialized multidisciplinary programs designed to control other problems and measures to determine the impact of such programs.

- Successful methods utilized in the project should be applied elsewhere in the program, if appropriate.
- Volunteers should have been considered for distribution of malarial suppressants to preschoolers, since they had demonstrated effectiveness in reaching school age children.
- Attendance schedules for well-child surveillance visits should have been adjusted to be more realistic. Infants and children 6 months to 3 years of age could have been seen every 6 months (instead of every month) and perhaps mothers would have cooperated better. An alternative approach would be to have had children visited at their homes or in their communities by VHWs or TBAs for surveillance.

B. Family Planning

Before the introduction of the Danfa Project in 1970, most family planning activities in Ghana and other African countries had been directed at urban populations; few family planning programs had existed in rural Africa. It was realized that if the government of Ghana were to achieve its new population goals, family planning services had to be introduced and taken to the rural areas where 70 percent of the Ghanaian population lived.

Objectives

The prime objective of the beginning of the program was to conduct research and test ways of delivering family planning services acceptable in rural Ghana. Prior to this, there was controversy both internationally and in Ghana about the most cost effective way to deliver family planning

services. Many thought the most effective program would be combination of comprehensive health care and family planning services which together would help reduce fertility rates through increased child survival and contact with susceptible women. Seventy percent of the clients using the health center were women and children.

Another group thought that because of the expense involved insistence on comprehensive health services would delay implementation of family planning. This group believed that provision of effective family planning and general health education would bring many of the health benefits of comprehensive health services.

There was yet another group that believed family planning would be readily accepted if only effective contraceptive methods were made available.

A fourth group was of the opinion that reduction in fertility depended primarily on socio-economic improvement and that as levels of education and income improved, Ghanaian couples would find ways to reduce fertility without special programs.

The initial research objective of the Danfa family planning program, therefore, was to develop and implement a quasi-experimental research design to resolve this controversy.

After 1975, evaluation in hypothesis testing was de-emphasized and changes in program were introduced to allow greater flexibility to carry out operations research and to most practically deliver family planning services in rural Ghana.

The focus of the new program was to increase accessibility of family planning services within the given resource constraints. In

1975, there were 2,350 family planning visits and 795 new acceptors. Sixty-eight percent were females of which 23 percent were from Area I; 28 percent were from Area II and 12 percent come from Area III. Thirty-seven percent were drawn outside the project area.

The new program involved the following:

- (a) Distribution of contraceptives by community. This was carried out within the framework of the comprehensive village-based health care program using village volunteers.
- (b) Resident clinic nurses to deliver family planning services. This resulted in 33 percent increase in female acceptors. In-service training programs are important to maintain continuity of services since there was such rapid turnover in many health centers.
- (c) TBAs also gave advice and motivation in family planning. Surveys provided information on knowledge, attitudes, and practices which were useful in planning educational activities.

Staffing

Since the original research design required that comparable family planning services exist both in quality and quantity in the three areas, the same personnel was used in all three areas.

Between July 1972 and October 1974, the team alone provided services to a region of 220 square miles with population of 47,000. The team was made up of the following:

- 1) Family Planning Nurse--This was a state registered nurse-midwife who had had 8-weeks of additional training in family planning. She was also the team leader and supervisor.

- 2) Family Planning Assistant--This was an enrolled nurse (2 years of training after middle school) and had also completed an 8-week training course.
- 3) Clerk--An individual with secondary school education, the clerk registered clients after identification on the census list and issued identification cards. He or she also maintained books on acceptors. If a client was not already registered he was then included in the census registration form. During busy sessions the clerk helped dispense foams, condoms, and other materials.
- 4) Driver--The driver loaded and unloaded the vehicle in addition to driving the members of the team to the field.

Organization and Management

Three clinic areas were selected for family planning services in each of the three areas in Area I; the sites selected were the established health center and its two satellite clinics. In Areas II and III, one clinic was attached to the government health post (Ministry of Health). To select other two villages, consideration was given to the geographical areas they would serve, population, distance from other villages, accessibility, and interested TBAs in the village. The village leaders' interest in the project and the willingness of the community to donate the building was also taken into account. The family planning team, a mobile group not posted to any particular clinic, visited each of the nine clinic sites once every two weeks.

Equipment

Equipment the team carried consisted of contraceptives, supplies, sterile instruments; I.U.D. insertions (only given by a state registered nurse), BP thermometer, scale, and stethoscopes. During the first team visit, villagers interested in family planning were given a short talk and allowed to select the method they desired. Followup visits were also made.

Extended Program

After 9 months of its operation the team's work was modified to carry out an extended program as a result of sample analysis of the hand tallied numbers.

Research

Barely nine months after the program began, a sample analysis was made of the hand tallied numbers and percentages of acceptors based on the distance they lived from any of the three family planning clinic locations. The findings suggested the need to modify the work of the team into an extended program. (In Area I, there were 42 percent acceptors, in Area II, 67 percent and in Area III, 90 percent came from the villages in which the clinic was situated. Only 18 percent of the population in the three areas lived in these clinic villages). The obvious conclusion was that even though there was a desire for family planning services, the villagers were not prepared to travel long distances for family planning services alone. Health centers and satellite clinics that offered other health services in addition to family planning attracted women from greater distances. (In 1973 the work of the family planning team was extended to

cover a large number of villages. They now visited an additional village on their way to the regular clinics. This was done without any additional staff to the teams. In the first few months of the extended program the monthly acceptance rate doubled. Before this, it had begun to fall as the number of interested women in the village clinics diminished.)

After the 1975 evaluation, other health workers other than the family planning team took part in providing family planning services. Thus the health center team integrated family planning into the regular maternal and child health services. The TBAs were also involved in family planning motivation and referral of patients. The village health worker was trained to resupply acceptors and carry on with motivation and referral.

The family planning manual, written in collaboration with officials from the Ministry of Health was very useful to MOH. The project also allowed the training of many family planning workers. In the early 1970s, less than 200 nurses were trained in the delivery of family planning services; by 1977-78, nearly 2,000 nurses had been trained. The manual is thus well used by the Ministry of Health personnel.

Critique

The research-oriented project made the project rigid in policy. Even though it was evident after a year's operation that changes had to be made, this was slow in implementation. The 1975 evaluation, however, made it possible to revise the project paper of the Danfa Project 1975-79. Personnel other than the family planning team became involved in motivation and teaching of contraceptive techniques, resulting an increase of both male and female acceptors. It became obvious that it is desirable to

train all health personnel to delivery family planning services as a regular part of their other duties.

The commercial program which was tested in Area II showed that utilization of the commercial distribution outlets was poor. Easy accessibility of the projects other family planning services contributed to the increase in acceptors.

The initial use of one team for delivery of service in all areas proved expensive because of the cost of transportation. There was not enough information on side effects of the various contraceptives used by the project and useful data could have been collected on this.

Recommendations

- that all health service personnel be trained to participate in family planning education and service as an integral part of their routine duties.
- that the family planning "Manual 'A' and 'B'" be more widely circulated and its use encouraged in all regions.
- that family planning be incorporated into all comprehensive health programs.
- that contraceptives not be available for sale through commercial vendors, but that contraceptives be made available at convenient locations at no cost to acceptors to eliminate any barriers of continued use.
- that linkages between the Ministry of Health Family Planning Section and the Ghana National Family Planning Program be continued.

--that all AID projects involving family planning incorporate a research design to identify and analyze the unwarranted side effects of the contraceptives used.

C. Health Education Program

The Danfa Project is to be commended for placing a high priority on health education. There was full realization that to achieve its goals of Operations Research-Health Delivery Services, health education would have to be an important and integral part of its programmatic-research framework. Some selected factors contributing to this program policy determination were as follows:

- Imperative that there be considerable involvement of the Danfa residents.
- Emphasis on behavior change leading to improved health status.
- Number and types of health problems in the area.
- Focus on preventive health practices.
- Cultural and ethnic patterns influencing health beliefs and practices.
- Importance of traditional means for meeting health needs.

The problems to be addressed by health education had their basis in the overall project problem. They appear consistent and appropriate with the goals and objectives established to deal with the problems of the Danfa Project. Given this framework, it is the purpose of this section to outline the goals, purposes, and operations of the health education program, to critique the health education program operations, and to advance appropriate recommendations.

Objectives

The health education program objectives were as follows:

- To provide comprehensive health education coverage for all villages in Areas I and II
- To create and maintain effective lines of communication between health facility staff and villages
- To concentrate on motivating villagers to use preventive measures in improving health
- To employ a multidisciplinary approach in attacking rural health problems
- To provide continuous health care through a system of referrals to health facilities
- To provide continuous health care through a system of followup requests from health facilities.

These objectives guided the health education program from its inception in 1972. Program planning, evaluation and changes were performed using these objectives as the principal criteria.

The objectives, however, do require additional clarification relative to purpose and scope. For example, the first objective refers to "comprehensive coverage" and in this instance means geographical coverage. The intent is that all villages in the Danfa Project area receive appropriate and/or designed health education services. On the other hand, coverage from a programmatic perspective seems to be the intent of the fourth objective. The program activity areas identified for concentration are:

- Maternal and Child Health
- Nutrition

--Sanitation

--Family Planning.

The concept of "continuous health care" as enunciated in objectives five and six denotes a linkage between the health education program and health facilities. The referral--followup system is an attempt to make certain that, on the one hand, services are provided to patients, and on the other hand, that the patients pursue the appropriate actions as a result of this process.

Critique

Given that most of the objectives are procedural in nature (as opposed to behavioral), they are appropriate, adequate and timely but with certain limitations. The critical concern is that it may be possible to reach the stated objectives without an assurance of behavior change leading to positive health practices and thereby contributing to improvement in health status. The provision of comprehensive geographical coverage along with the maintenance of lines of communication would not necessarily lead to change in behavior. The same would hold true for employing a multidisciplinary approach and creating a system of referrals for followup.

Although it is not the case in the Danfa Project, there is always the possibility that so much emphasis could be placed on achieving procedural goals that a program could overlook or not design efforts aimed at achieving behavior change.

Further, it is helpful in evaluating health education activities or efforts to have the goals stated in behavioral terms. In this way, there is no doubt that what action by the individuals involved is the

desired outcome. Procedural criteria may be set as subobjectives to be used as a step ladder process in achieving the overall behavioral goal.

Thus, the suggested and preferred model is one where the process is inverted by using procedural and process goals to attain behavioral goals. In the Danfa Project there is a determined and consistent effort at achieving behavior change but as a subset of the overall procedural objective. It is the evaluation team's judgment that an inversion of this process would provide additional strength to an already strong health education effort.

Recommendations

- (a) That the Danfa Project continue its emphasis on designing and implementing health education activities that would lead to appropriate and desired behavioral changes.
- (b) That the Danfa Project restate its general goals in behavioral terms for programmatic and evaluation efficiency and to be consistent with its present emphasis on behavioral change.

Staffing

It is to the credit of the Danfa Project that it recognized the role that all health staff have to play in health education. As the project was designed and implemented, there was considerable evidence that health education permeated the functions and responsibilities of all staff. For example, this was the case for public health and community health nurses, nutritionists, TBAs, village health workers, health center superintendents and other supporting staff. On the other hand, there was

full recognition of the need for a staff person with primary responsibilities in health education. An innovative approach to meet this need resulted in the creation of the Health Education Assistant (HEA) in 1972.

The HEA was created as a multipurpose community health worker. This broad approach was supported by selection, training, and responsibilities of the HEA.

Selection. The HEAs were selected from existing health workers-- family planning workers, community health nurses, nutrition technical officers and sanitation assistants. Eight such HEAs were selected at the inception of the program and at evaluation the project still had a personnel complement of eight. There were, however, three vacancies. There was evidence of a high turnover rate that has implications for selection, training and program continuity.

The HEAs are seconded from other agencies and organizations, among them the Ministry of Health and Planned Parenthood. The rationale given is that this would ensure employment at the termination of the project.

Training. The eight original HEAs were involved in a training program during the year 1972-73. The program included the following subject areas:

- (1) Community organization
- (2) Health education concepts and principles
- (3) Nutrition education
- (4) Family planning training and field experience
- (5) Environmental sanitation
- (6) Maternal and child health care
- (7) Audio-visual training

(8) Field internship in community development

All of the training was provided by the Danfa Project through a careful use of existing training resources of other agencies. At evaluation, new HEAs were required to participate in a three-month training program that included a field internship.

Job Responsibilities. The HEA was responsible for providing leadership in areas such as community organization, community planning, community involvement, and training and liaison. However, the HEA was most heavily involved in specific program areas as follows:

- (1) Family planning
- (2) Nutrition
- (3) Maternal and child health
- (4) Environmental sanitation

In all of the above areas, it was the HEAs responsibility to:

- Suggest problem areas for diagnosis
- Plan and analyze health education surveys
- Establish liaison with appropriate community groups and other organizations
- Involve village leaders, teachers and traditional health practitioners in health education activities
- Design and implement training programs
- Give lectures on health topics and problems
- Participate in referral and followup activities
- Conduct home visits and discussions on family planning.

The above list of responsibilities is by no means exhaustive but represents an interesting array of program activities.

Critique

The Danfa Project did an excellent job in its approach to staffing the health education component. The HEA represents a significant contribution to the health education profession and particularly as it relates to countries and areas with similar health problems and issues.

The process of selecting the HEA from among other health fields and existing health agencies and organizations was appropriate and timely at the beginning stages of the project. The high turn-over rate along with the fact that vacancies must be filled from the designated health area and parent organization suggest that consideration should be given to alternative means of selecting HEAs. One possible alternative might be to recruit from village residents who have served as volunteer village health workers.

This is particularly acute since it was reported that some HEAs have a tendency to relate first to their parent organization before discussing matters with their supervisors in the Danfa Project. This may create undue tensions on the part of the involved individuals and agencies.

The training program for HEAs seemed reasonable and does an adequate job in preparing the HEA to meet job expectations. The opportunity to observe two HEAs giving health lectures to clinic patients provided evidence of their ability to articulate health concerns and, most important, foster discussions with and among clinic patients. The community health nurse was also very effective in this setting. In subsequent interviews with HEAs, they stated very positive feelings towards the training provided by the project.

At the beginning of this discussion on staffing, we noted the project's recognition of the role that all health staff must play in providing educational experiences. It was an important aspect of the program and should be continued and expanded and improved where possible. Evidence available to the team suggested that one way to continue this requirement would be through periodic training in health education for non-health education staff.

The responsibilities of the HEA were varied and covered a wide range of educational activities. Most of the documents studied and interviews conducted led the team to the conclusion that most health education activities are centered in the four program areas, i.e., family planning, nutrition, maternal and child health, and environmental sanitation. It has also been shown that some HEAs will tend to concentrate their health education activities in the area of their previous health field. That is, the HEA with a sanitation background may lean in that direction in planning and implementing programs. This leads to at least two considerations: (1) the responsibilities of the HEA need a sharper focus; and (2) monitoring of health education activities should continue so as to ensure a balanced programmatic approach.

There is evidence to suggest that the HEA concept cannot be replicated by the MOH. In its strategy for Primary Health Care, the MOH is to provide health education consultation and guidance at the regional level and depend on other health staff to provide health education at the village level. There are no provisions in the Ghana Civil Service mechanism for a worker such as a HEA at the village level. It is important, however, that every effort should be made to transfer the concept of the

HEA to other areas as a part of primary health care.

Recommendations

- (a) That serious consideration be given to designing alternate means for selecting HEAs.
- (b) That a study be conducted to determine present training needs of HEAs (consistent with any other changes that might be made in the program) that would influence the time required to provide such training.
- (c) That training programs for HEAs should be modified as appropriate and be provided for non-health education staff.
- (d) That the project continue to provide a high level monitoring system to ensure a balanced health education program based on village needs.
- (e) That personnel-training consultants be involved in redesigning the job responsibilities of the HEA.
- (f) That the Danfa Project and the MOH work with the Ghana Establishment Secretariat (Civil Service) to determine appropriate personnel categories for HEAs at the village level.

Program Organization

As was the case with a number of other Danfa Project programs, the organization of health education divided in two phases--pre-1975 and post-1975.

Regardless of the phase, HEAs were, in the final analysis, administratively responsible to the Director of the Danfa Project.

Overall health education management was provided by the Health Education Specialist.

The research design called for the Danfa Project to be divided into four areas. Health education programs were to be provided in Areas I, II and III with Area IV serving as the project control area. Practically, all documents examined discuss health education in only Areas I and II. In personal interviews there were mixed responses, in some instances, health education programs were conducted in all three areas.

Prior to 1975, the program organization and management reflected the following clear activities:

(1) Central Base Team Model:

HEA resided at one site and traveled to the other communities.

(2) Multiple Base Model:

HEA resided in turn at each of five sites completing the rotation in one year.

(3) Independent Regional Supervision:

HEA worked alone, interfaced with others and was responsible to health education specialist.

(4) Integrated District Supervision:

HEA integrated into total program and was responsible to District Medical Officer.

In addition, there was an elaborate rotation scheme aimed at moving HEAs between areas for research purposes.

After 1975, the rotational system was disbanded and emphasis was placed on integrating HEAs into the overall health team. The assignment of HEAs currently employed was as follows:

Area I--Integrated--3 HEAs

Area II--Independent--1 HEA

Area III--Health Post Base--1 HEA

Area IV--Control

Thus in the integrated model, the HEAs were responsible to the Public Health Nurse who in turn reported to the District Medical Officer. These latter two individuals were with the Ministry of Health. In Area II, the HEA was responsible to the Health Education Supervisor who reported to the Health Education Specialist.

Up until 1975 a health education specialist from UCLA was assigned to the project and located in Ghana. This person provided overall management for the health education program in concert with his counterpart from Ghana Medical School.

Critique

By removing the constraints of the research design as a result of the APHA evaluation, the health education component moved much closer to a service model. The smooth transition were evidence of good management. The critical concern, however, was the impact of the management-organization structure and process on the ability of the program to attain its objectives. There seemed to have been a fixation on the part of the health education leaders relative to the organizational models for health education programs. One major problem of the health education program was that in both written and oral discussions an unusual amount of time was devoted

to the organizational models as related to the many other components of the health education program. The objectives and the activities leading towards such achievement were influenced, perhaps disproportionately, by the emphasis on organizational models.

Recommendations

- (a) That the program continue to develop the service-oriented administrative model in all areas of the Danfa Project.
- (b) That administrative developmental efforts be conducted in cooperation with the MOH to ensure ease of replicability.

Program Activities

It was difficult in a short period of time to cover all health education program activities in the Danfa Project. This was not possible because issues and problems varied with time and circumstances and there were not sufficient hours to observe first hand the HEAs at work. In reviewing documents and interviewing health education staff, some important program activities conducted by the HEAs did emerge:

--Maternal and Child Health

- (1) Provided advice to pregnant women through home visits.
- (2) Participated in weighing programs held once a month for children under five years of age.
- (3) Conducted educational discussions on various health topics.
- (4) Supervised TBAs. In this role, was responsible for:
 - Checking on equipment and supplies
 - Monitoring record keeping
 - Encouraging village women to use trained TBAs
 - Serving as link between TBAs and health center staff.

(5) Referrals and followup

--Nutrition

- (1) Conducted home visits to determine at-risk individuals in need of nutritional assistance and/or information.
- (2) Organized women's groups.
- (3) Involved Agricultural Extension Officer in developing backyard and school gardens.
- (4) Provided nutritional information as part of MCH weighing program.

--Family Planning

- (1) Worked with village leaders and residents in preparation for family planning team.
- (2) Helped new acceptors understand the program.
- (3) Conducted followup visits with new acceptors.
- (4) Organized appropriate educational programs.

--Environmental Sanitation

- (1) Worked with village leaders and groups in developing programs dealing with
 - water resources
 - refuse disposal
 - general sanitation and cleaning.
- (2) Worked with individual households on household cleaning.

--Interfaced with representatives of the following:

- (a) Ministry of Health
- (b) Ministry of Social Welfare and Community Development
- (c) Village Development Office

--Village Development Committee

Such committees were in most villages. If a village did not have a committee, the HEA would help to organize a committee assisted by the Community Development Officers of the Department of Social Welfare and Community Development.

--Referral and Followup Activities

--Immunization Programs

--Community Organization

--Volunteer Health Workers

(a) Assisted in identifying, selecting, and training volunteers

(b) Provided supervision for volunteers

The monitoring of health education activities was done in a highly sophisticated and systematic manner. HEAs were requested to submit work plans every two weeks that called for listing of activities, location, date, and time. Two records were kept of these activities; they were the (1) Village Activity Report and (2) the Administrative Report Form. Recorded were the activity, date, time, target group, purpose, discussions, observations, problems, action taken, followup and referral.

Critique

Through its many program activities the HEAs became valuable resources for the villages. The village leaders looked to them for advice in health and non-health matters and respected their judgment about village problems and concerns. This represented a remarkable achievement for any human service worker regardless of his or her field. This outcome was important because, from all evidence, some of the health education activities were planned, designed, and implemented in a rather rigid

and predetermined manner. For example, the reporting and recording system and the designation of the four program areas tended to influence what health education a village would get, whether appropriate or timely. The prepared (canned) lecture approach, while very good when observed in three instances, can be counter-productive in leading to behavior change.

The paramount issue dealt with impact of these health education activities on health status. After nine years, there were no firm statements from the program staff that health education has made a difference in the Danfa Project area. This may be due in part to the fact that all the data have not been analyzed. The report of the health education specialists at the final review meeting held January 29-February 1, 1979 stated:

It is the belief of the health education team, that once the volumes of field data collected have been analyzed, we shall be in a position to quantify the impact of the program on certain characteristics of our communities.

It is understood, of course, that health education does not function in a vacuum. It must operate in full partnership with other project components in reaching desired goals. There is evidence, on the basis of the health practices survey, that changes occurred relative to certain health practices, such as an (1) increase in percentage of children with birth certificates, (2) an increase in the number of children with Morley typed weighing cards, (3) an increase in availability of adequate latrine facilities, and (4) an increase in number of villagers participating in community development activities. There was no evidence that these changes in health practices resulted in appropriate changes in health status. Some attempt at an assessment of this important factor should have been made by now.

Recommendations

- (a) That the HEAs continue to serve as human service resource for village leaders.
- (b) That the HEAs concentrate more on the community development approach in designing and implementing health education activities.
- (c) That an appropriate operational evaluation and feedback mechanism be designed as an integral part of the health education program.

D. Evaluative Research

Since 1970, the Danfa Project had attempted to incorporate both formative and summative evaluative research into its overall service delivery program. That is, the project systematically attempted to use data collected during the course of the project to influence its service delivery program as well as collect data to assess the impact of these services on selected outcome criteria (i.e., health practice and health status). While the recommendations of the 1975 APHA evaluation modified some aspects of the basic project design as well as changing the priorities of the project activities, these changes basically enhanced rather than limited the project's potential ability to conduct relevant evaluative research. Following is a discussion, critique and set of recommendations related to the research involving health services/family planning and health education activities.

Data Source

The project collected a great deal of data relative to health services and family planning. In addition to several special epidemiological

surveys, e.g., malaria prevalence (1973, 1975, 1977), poliomyelitis (1973), and guinea worm (1973), the project conducted a series of longitudinal data collection efforts. These included a baseline census of the Danfa area in 1971, a resurvey each year to assess migration and a one time socio-economic survey in 1975; a longitudinal fertility survey of a random sample of 7,000 households (approximately 500 in each area) in 1972, 1975, and 1977; a village health survey involving a physical and laboratory examination of 4,000 persons in 1973, 1975, and 1977; a knowledge, attitude and practice survey for MCH involving 900 women in 1972, 1975, and 1977; a health practice survey to assess behavioral patterns conducted in 1973, 1974, and 1976 involving approximately 800 households in each survey; and a series of longitudinal male and female knowledge, attitude and practice studies (KAP) as well as a family planning acceptor-followup survey.

These data collection efforts were further supplemented by the establishment and use of various record systems. These systems included the establishment of the patient encounter record (recorded diagnosis, treatment and selected socio-demographic data) which documented each patient visit to the DHC and its satellite clinics; the recording of all vital events in the area and a series of special efforts to assess the cost of material, personnel, and transportation associated with research and service delivery efforts.

Health Services/Family Planning-Formation Evaluation Activities

Selected aspects of these multi data sources were used to document and define health problems in the Danfa area and modify and suggest change in the service delivery program as well as assess the ultimate impact of

the program. In terms of formative evaluation, it is clearly possible to identify instances where collected data were used to design or influence the type of services provided. For example, the development of satellite clinics as an extension of the DHC was based on the early examination of utilization statistics. Other examples of data and operational research efforts influencing the type and form of services delivered include the reorganization of staff roles based on task analysis, the reduction of stock medications, the identification and training program for TBAs and the development of the extended family planning team.

Health Services/Family Planning-Summative Evaluative Activities

The summative evaluation efforts were more complex. Following the recommendations of the 1975 APHA evaluation team, the study relaxed its experimental design, but continued to collect data to assess the ultimate impact of the services on health status and fertility. Using several standard indices of health status, e.g., crude death rate, infant mortality, pre-natal mortality, post pre-natal mortality, pre-school mortality and maternal mortality, the final report concluded (with appropriate documentation of data and design limitations) that the health services provided had a significant impact on health status--and, in fact, the project achieved its stated purpose of reducing infant, child and maternal mortality by 10 percent by 1980.

Reductions in vital rates in the four project areas were assessed by testing whether observed reductions followed a linear trend in time. These tests indicated a significant reduction in birth rate for Area I but not for other areas. Significant reductions in total fertility and gross reproduction rates were recorded for Areas I and II and in death

rates for Areas I, II and III. The final draft project report acknowledged considerable fluctuations in the coverage of vital events from year to year and area to area (page A2-14). Estimates of vital events are thus subject to variable errors, the magnitudes of which have not been indicated. It is thus difficult to know how reliable the estimates of adjusted and standardized rates are.

Similarly, in family planning, the 1975 PROP clearly outlined the expectation of achieving acceptance of family planning of 30 percent of fertile families. It is hard to determine whether this percentage of acceptance has been achieved, since the final draft report fails to document the total number of eligible women. However, the report did present increases in the total number of new acceptors, suggesting that there had been a significant increase in overall acceptance (1972-77), particularly in Area 1. The project also reported a decline in the birth rate and general fertility rate between 1971 and 1977 from 226 to 178 for Area 1 and lesser declines in Areas 2 and 3. The birth rate remained constant for Area 4; however, there was a modest decline in the general fertility rate. These latter findings were extremely tentative since they involved a relatively small mobile population and a known under-enumeration problem of births and deaths in 1971-72 and to a lesser extent in subsequent years.

Health Education: Formative and Summative Evaluative Activities

A number of studies and surveys were specifically designed and conducted as a part of the health education effort. These studies and surveys had as their primary purpose to provide data that would be useful in assessing change in health behavior and in suggesting appropriate changes in program activities. The principal means for reaching these goals was

through special short-term studies in problem areas and through a longitudinal study titled the Health Practices Survey.

Special Short-Term Studies. The special studies were designed to provide indepth understanding of the extent of change in health practices resulting from health education programs. A brief synopsis of these studies as summarized by the Health Education staff follows:

- (1) Family Planning Education Study
 - Show that individuals could be influenced to seek family planning adoption through group education at a low cost per acceptor.
- (2) Pre-schooler Weighing Program
 - Confirmed that those with weighing cards were at the outset a high-risk group but improved considerably over the course of the program.
- (3) Social Networks and Health and Family Planning Behavior
 - Demonstrated that people do not necessarily confide in those they seek information from. Different types of individuals were identified as information sources for different innovations.
- (4) Guinea Worm Study
 - Demonstrated that studies would be needed to determine educational approaches based on ethnic differences.
- (5) Participation by Villagers in Health Education Activities
 - A factorial design indicated that child nutrition activities had higher participation rates than family planning activities.
- (6) A Study of Educational Materials
 - Showed that of available educational materials, there was

considerable misunderstanding of what ideas were to be conveyed.

(7) Social Indicators as Means of Village Differentiation

--An assessment of structural and physical properties in the household showed considerable heterogeneity within and among villages.

Longitudinal Survey. The principal survey conducted in the Health Education Program was the Health Practices Survey formerly known as the Household Health-Related Behavior Survey. This survey was designed to assess changes in health practices. It was to provide a baseline for the health education program. The survey was conducted in 1973, 1974, and 1976. Its objectives were:

- (1) To serve as a baseline with regard to assessing the absolute impact health education has on the overall health effort,
- (2) To provide data for program planning by assessing areas of educational need, and
- (3) To operate as a source of feedback to project staff with regard to the effectiveness of their efforts.

The survey protocol was designed to provide data in such areas as follows:

- (1) Prenatal Care
- (2) Postnatal Care
- (3) Child Care
- (4) Immunization
- (5) Community Activities
- (6) Refuse Disposal
- (7) Water Resources
- (8) Foodstuffs.

This survey was conducted by trained interviewers including HEAs. In each year (1973, 1974, 1976) every household in villages with fewer than 40 households and more than 50 inhabitants were surveyed. A serial sample by house number was conducted in those villages with more than 40 households.

Critique

The project collected a great deal of information and from all indications both the UCLA and Ghanaian staff took great care to assure the quality of the data. Perhaps its greatest limitation was that the project collected far too much data relative to the available manpower and data processing capacity. As a result, the project gives the impression of simply being a research operation at the expense of meeting its teaching, service, and institutional development objectives. Below is a listing of specific points relative to the respective research component of the project.

Formative Evaluation. The operational research activities, i.e., utilization--distance studies, task analysis, and others that were done were well conceived and executed. However, three specific problems are evident. First, while the institutionalization of an operational research program was not a major objective of the project, the project clearly missed an opportunity to demonstrate or at least lay the foundation for the institutionalization of operational research activities. For example, the project failed to develop transferable data feedback mechanism to identify operational problems on a continued basis and thereby provide the opportunity to initiate corrective action. While monthly service statistics were presented to various key project personnel, data were not

presented in any comparative format to permit the easy identification of changes such as utilization, acceptance, and prescribing pattern. Moreover, while the encounter form provided the basis for a data collection system useful to MOH health center, MOH personnel unfortunately failed to see any development in the Danfa Project potential for the MOH system.

Second, because of the inability to process data in a timely fashion, the service delivery program did not have the full benefit of the data collection system. While the design of the health education program was initially based on the 1973 survey, there was no evidence that data reflecting change between the 1973 and the 1974 survey eventually was used to modify the program to enhance its overall impact.*

Third, some important areas of investigation were neglected. For example, a basic issue given the original intent (but not necessarily PROP objective) of the project was to determine how to maintain community involvement and commitment in a self-help community health development effort. The project from the very beginning lost sight of this important component and missed a significant opportunity to develop guidelines for subsequent efforts.

Special Epidemiological Studies. A great deal of time and energy were allocated to basic epidemiological research. While many of the projects simply document the prevalence and incidence of the problem and provided basis for future planners, others provided information to

* One possible explanation for the failure to fully use the data from the 1974 survey was that the project failed to control for the amount of learning gained by participating in the 1973 survey. This is unfortunate since the project could have easily selected a sample of respondents not participating in the 1973 survey and thereby determined the amount of learning gained by prior participation in the survey.

influence the basic conceptualization of the problem. For example, the documentation of hernias as a significant problem had little immediate relevance since hospitals already have a waiting list for corrective surgery. However, that information would provide statistical information for the MOH Planning Unit as it projects facility construction. The documentation of polio as a significant problem had a more significant impact: polio was traditionally not considered a significant problem although it was part of the national immunization program. Data collected from the Danfa Project showed dramatically the magnitude of the polio problem, requiring a major shift in emphasis at both the national and perhaps international level.

Summative Evaluation. The summative evaluation research activities also suffered from delays in the analysis of data and the incompleteness of data analysis once presented. While any project encounters numerous unanticipated delays and has an unending agenda of further analysis, the problems of delay and incomplete data analysis in the Danfa Project were exacerbated by the level of expectations generated by the project. These expectations were a function of the long term nature of the project, the dollar resources available, and the known computer capabilities at UCLA. These delays greatly limited the policy implications and overall credibility of the project.

Several additional problems and limitations were associated with the summative evaluation activities:

- (a) VHS--While some use is made of the antropometric data collected during the 1977 VHS, only limited use is made of their data to assess the overall impact of the program. These data were extremely costly to obtain and represent an important indicator

of health status that should be fully analyzed to assess the overall program impact in Areas I, II and III.

- (b) Family Planning Survey--The project fully recognized the limitation of using fertility measures as an ultimate measure of family planning effectiveness, (i.e., immigration, a limited population base, external factors, etc.) and thus wisely used acceptance and continuation rates to demonstrate intermediate program impact as well as guide the development of modification in the service delivery program. Unfortunately, at least in the final report, there is no use of age-specific acceptor and continuation rates.

Moreover, in the presentation of the family planning acceptor and continuation rates, it is difficult to determine whether the objective of 15 percent acceptors by eligible women was in fact achieved. While significant increases in acceptors were reported for Area I during the course of the project, the failure to include number of eligible women makes these figures difficult to interpret.

- (c) Health Practice Survey--The project provided a comparison between the 1973 and the 1977 health practice survey for Areas I, II and III. While significant changes were reported in several health practice areas, e.g., BCG vaccinations, adequate human waste disposal for children under 6, etc., there are several changes opposite from that reported such as smallpox and measles inoculations, and adequate disposal of human waste among adult males. Unfortunately, the project

failed to provide an adequate explanation for these findings and did not identify predisposition characteristics to help account for the changes.

- (d) Survey and Registration of Vital Events--The Chandrasekar-Deming method which was used to estimate the numbers of vital events is valid under certain assumptions which were apparently not fully met by project area conditions. One of these assumptions is the independence of the two reporting systems--that is to say, the chances of an event being recorded by the annual survey are the same whether the event was recorded or not by the registration system. This was clearly untenable for a community with a substantial migratory turnover. Moreover, the high rate of migration reported in all project areas (page A2-42) would tend to increase the number of missing events, thus contributing to a high correcting factor for the number of recorded events. This affected the precision of estimates of vital rates to which reference has already been made.
- (e) Relationships Among Surveys--The project failed to assess changes in health behavior patterns or family planning capability relative to changes measured during the 1973-75-77 VHS. This is particularly important since this type of data are quite unique and if analyzed would provide important insights into causal relationships among health practice/family planning/health status.
- (f) Data Comparability--The 1971 baseline studies indicated substantial differences in population structure and in the basic

demographic characteristics of the four project areas. Nor surprisingly, the project areas differ somewhat from the national average. No data were available to determine the extent to which the project areas represent typical Ghanaian rural communities. It is thus difficult to determine reasonable expectations from future replications of the Danfa operations elsewhere in Ghana.

In the comparative analyses of the various survey data for the four project areas no systematic attempt has been made to relate differences in survey finding to recorded differences in the baseline characteristics of the project areas. Fortunately, the data is available and studies of this nature can still be made.

Data Accessibility. For all practical purposes the data were not--and still are not easily accessible. Data documentation was still in process and plans only now being made to archive the data. Data accessibility was further complicated by several other factors.

- (a) loss of critical UCLA staff. Drs. Belcher and Ward left the project prior to the official termination date. Drs. Blumenfeld, Lourie, and Nicholas will leave either on the termination date or shortly thereafter, thus hampering the further analysis of the data.
- (b) the lack of clarity about the ownership of the data and the reluctance to have the data processed at UCLA* further

* Evidently, ownership of data was as important issue from the beginning of the project. While UCLA was extremely sensitive and in fact took deliberate pains to show coauthorship, etc., a previous relationship involving an American University and GMS had a restraining effect on the willingness to have UCLA process data when it was obvious that GMS had limited computer capability.

delayed small analysis efforts.

Data Utilization. A critical element in any evaluation research effort (either formative or summative) is whether the product of these efforts are used by significant others. Specifically--did the various operational studies and impact studies influence other development of policy or programs in official agencies such as the MOH or Ghana National Family Planning Program. Here the results were clearly mixed, however, most agreed that at the very minimum the project had a substantial informal impact on developing Ghanaian health services program.

For example, findings on immunization patterns from the Danfa Project have influenced the MOH immunization program. Prior to the Danfa experience of mass immunization programs using the effective administration of multiple antigens (without a significant side effects), the Ministry was giving single or limited combination antigens. This practice resulted in smaller numbers of children completing scheduled immunization programs. Currently, the Ministry of Health plans the administration of multiple antigens in a single dose.

Similarly, while the Danfa Project was not the first to identify and train TBAs, the project devised an effective method of involving these indigenous personnel into the ongoing country development/health delivery program. Finally, and perhaps most illustrative, the Danfa Project appeared to have had an important influence on the development of the MOH primary health care program.

Involvement of MOH. A traditional problem generic to health service demonstration projects is the relationship between medical schools and Ministries of Health. Medical schools are usually involved in the design, operation and evaluation of the demonstration projects; ministries are concerned with the ultimate implementation of those programs found effective. Unfortunately, the Danfa Project is not an

exception. While the MOH was technically involved in the Danfa Project from the beginning through the use of its own service delivery personnel as well as its operation in formal periodic reviews of project activities, there was no evidence that key MOH personnel are willing to accept or at least formally acknowledge the utility of programs or data derived by the project. The one exception is the planning unit of the MOH which is supportive of the Danfa Project and its research efforts. This unit will be a critical bridge between the MOH service programs and project personnel involved in future data analysis and program development.

Recommendations

--The amount of data collected should be limited by the host country's manpower and data processing capability. In case of the Danfa Project, the amount of data collected was totally unrealistic relative to the project objectives and GMSs capability to deal with it. Moreover, in funding future demonstration projects, consideration should be given to locating in countries with adequate and accurate census data and measurement techniques. Health services projects should build on other projects which have already established an infrastructure capable of supporting the demonstration project. For example, in 1970 AID funded the establishment of population labs in several countries, e.g., Kenya, Morocco, and Columbia, with the explicit purpose of assuring more accurate census and demographic data and techniques. Since these have been highly successful, subsequent health services research/demonstration programs should be located in these countries to assure more accurate impact measures and to

capitalize on previous AID investments.

--Projects require greater interdisciplinarity to assure initial objective. Given the interdisciplinary objectives of the project, the Danfa Project was inappropriately located within a single UCLA academic department. The objectives of the project could have been better served by having the project administration located at the level of the dean at UCLA. This would have permitted the involvement of faculty representing various disciplines such as epidemiology, medical anthropology, etc. Moreover, this would have provided the basis for collaboration after the termination of the project since more participating faculty would remain at UCLA.

--Training of Ghanaians should have exceeded the requirements of the MPH core, with participants trained in epidemiology, economics, management and basic health service research skills. This level and breadth of training would have ensured--or at least increased--the probability that data collected would be analyzed. As it now stands, GMS is currently in the process of recruiting scholars from other departments at U.G., (e.g., economics, behavior scientists, etc.) to assist in further data analysis. While Dr. Ofosu Amaah is well intentioned, it is unlikely that he and his colleagues will have sufficient time to fully explore the data to impact on future planning and policy decisions.

--To assure substantive involvement of MOH and thereby facilitate the transfer of findings into policy, the MOH should be a formal co-signer/participant of the project. It is

obviously not sufficient to have had MOH involved through seconded personnel or participation in periodic review meetings if the ultimate objective is to have the Ministry implement service programs developed by the project.

- The project could have used less expensive technical assistance; four UCLA faculty in residence is excessive--even for a project of this size and scope. Better use of resources could have been accomplished with one UCLA--chief of party and a number of UOPI (University Overseas Population Interns) with relevant skills to the project. These might be recent Ph.D.s in systems analysis, epidemiology, biostatistics, or demography interested in international health careers. This approach would have enhanced the training impact and reduced the project cost.
- AID/G should award grant to GMS/MOH-Planning Unit to facilitate the analysis of Danfa Project data and to help resolve critical planning questions associated with the developing program in primary care.
- The development of a more detailed PROP with the inclusion of a causal network statement. This type of presentation would have provided an early identification of many conceptual and data processing problems.
- Project staff (both UCLA and Ghanaian) should be requested to redraft the final report. The report--while only a draft--is unacceptable as a final document for the size and scope of the project. While there are obvious design problems, and these are well documented in the report (i.e., internal migration, size of

population base to measure fertility change, under-enumeration problem, etc.), the project collected a great deal of valuable information that must be analyzed and formally presented in one single document. These areas of analysis include--but are not limited to:

- (a) use of age-specific acceptance and continuation rates,
- (b) estimation of population base to calculate the percent of acceptors from the total eligible population,
- (c) greater use of the 1977 morbidity survey data to report health status impact and use of intermediate health status indicators,
- (d) analysis of changes in health behavior patterns and changes in family planning KAP relative for changes in health status indicators measured during the 1973-75-77 VHS,
- (e) analysis of the data from the 1977 social economic survey and an assessment of this data in terms of morbidity and family planning acceptance.
- (f) comparative analysis of survey findings for each project area controlling for differences in the baseline characteristics of the project area.

--AID should obtain clean data tapes from UCLA and run data to determine whether data is adequately documented. It is further recommended that this analysis be conducted by a disinterested agency that would not bid on future African contracts or grants.

E. Costs/Cost Assessment

Because of the size and scope of the Danfa Project, the evaluation examined the effort in terms of costs/cost effectiveness. This process required a review of the objectives of the 1976 PROP. For example, the project proposed:

Demonstration of several cost effective health care systems to include family planning.

These activities related to:

Increased Effectiveness of Human, Physician and Financial Resources

by:

- * Analyzing costs to assure services do not exceed availabilities and compare cost effectiveness of alternative approaches,
- * Analyzing functions of services, subsystems and components,
- * Standardizing and simplifying patient management procedures including drug regimens, and
- * Using task analysis to best utilize health personnel.

The final draft report described the objectives as modified in 1976 as:

- (a) Institutional Development and Training,
- (b) Information Transfer,
- (c) Operational Research in Health and Family Planning:

Demonstration of several different health care models to include family planning as an integrated component suitable to the Ghanaian context, and

- (d) Epidemiological Investigation.

Finally, under "Cost Analysis of Health Care Delivery," the purposes of the costing program of the project were:

- * To monitor costs of each of the health service system components so as to assure that they were maintained within reasonable--if unspecified--bounds, both individually and collectively.
- * To measure cost-efficiency within the system using process-level denominators.
- * To measure cost-effectiveness of the system using outcome level denominators.

This evaluation concentrates on the areas relating to costs within the limits of the objectives as stated. In addition to studying the final draft report, numerous documents were read and discussions held with individuals with responsibility for and knowledge of the project.

It is also important to note that the evaluation was handicapped in the review of this area. There was no counterpart on the Ghanaian side sufficiently familiar with the development of the cost information to offer insight into the questions raised. Thus the draft final report was the basic source of reference.

The background of the report presents the intent, the methodology and the limitations experienced by the project staff in completing its analysis.

The methods of cost analysis are explained in detail for each of the areas for which costs were determined, i.e., personnel, materials (drugs and supplies), and transportation.

In addition, separate sections were devoted to explaining the analyses of the operational cost for

- (1) Health Center and the Satellite Clinics,
- (2) Health Education Program,

(3) Family Planning Program, and

(4) Cost of Area I Comprehensive Health Care Program.

This was summarized by a discussion on "The Affordability of the Area I Comprehensive Health Program," followed by the "Conclusions and Recommendations."

The report noted that even though the project was funded for the period 1970 through 1979, full year costs are reported only for the years 1973 through 1976. During this period the rate of inflation was 143 percent or 43 percent compounded for 1972 to 1976. Since this project was designed to monitor costs to assure that they were maintained within reasonable--if unspecified--bounds, the final draft report would have been more meaningful had the operating cost been projected reflecting the current rate of inflation. It also would have been more helpful to use the 1979 value of the cedi rather than limiting the presentation to a constant 1970 cedi value as well as including depreciation and overhead costs in the calculation.

The question of the appropriateness of including the cost of research and appropriate capital and overhead costs relates to the issue of complete and comprehensive reporting techniques. Since the final intent was to reflect the operational costs of the project, total costs (including capital, overhead and research) would have provided a more complete picture.

When future projects similar to the Danfa Project are presented for funding, total cost information must be available from this project to assist in the decision-making process of USAID. In addition to the monitoring of costs, there should have been a clear indication of the cost effectiveness and cost benefits demonstrated through the operations

research and the model programs. The cost of research was a major proportion of the project cost (see breakdown of total). Two questions are fundamental to future funding decisions: What was the value of the research effort? and Could the same result have been achieved without the research component? Since the data analysis determining the impact on health status and the cost analysis measuring cost effectiveness are not conclusive, the ultimate research value of the project cannot fully be determined.

Methods of Cost Analysis. The section on methods of cost analysis described the approach used to determine the costs for the major categories of personnel, material (drugs and supplies) and transportation. The methodology appeared appropriate for the cost monitoring purpose the project intended.

The advantage of measuring the cost impact of this program on the health status of the target population was missed. This was because detailed schedules for costing of the operation were not maintained and because measuring the changes in morbidity and mortality was, according to the final report, "difficult due to the small, mobile rural population, especially where there is not a complete recording of vital events" (Section 6.13.1 and 6.14.5--Final Report).

Table 6-8. Final Draft Report

Transportation Cost Per Mile, Cedis (Dollars)

<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
0.184 (0.160)	0.296 (0.257)	0.372 (0.323)	0.472 (0.410)

Comparative Operating Costs. A key objective noted in the project was to demonstrate the cost effectiveness of alternative delivery systems. The method chosen was described as "monitoring of cost," indicating that the level of detail would be limited. Unfortunately, the project did not develop appropriate cost measures to compare the systems. Reference is made to the use of the rural centers operated by the Ministry of Health for comparison; the centers selected lacked similarity in both volume of service and population served. This was a key determinant in the wide variance in the staff cost comparison.

Health Center and Satellite System Costs. The final draft report failed to fully analyze available cost data. For example, in the staff (personnel) category, it would have been more appropriate to show the number and type of full time equivalent staff for each year. If the program were to be duplicated, number and skill levels would be required to provide service at a given level of patient activity.

For comparison, the project staff chose to compare the cost of staff and medical supplies for several rural health centers within a 50-mile radius of the Danfa Center operated by the Ministry of Health for 1971.

Comparative Cost Per Visit (Cedi)
1971

	Danfa Project		MOH Rural Centers		
			1	2	3
Staff (number)	19	0.63	(20) 0.31	(17) 0.28	(28) 0.26
Drugs		0.85	0.22	0.24	0.13
Patient Visits		24,078	60,732	46,292	91,220

A more valid comparison would have been obtained had the cost monitoring system reflected the cost of operating Areas II and III. With this approach, the results of varying levels of inputs could have been

Table 6-9--Final Draft Report
Operational Costs of the Danfa Health Center and Satellite
Systems, Cedis (Dollars)

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Staff Care Prov. Others	18,886 (16,423)	32,503 (28,263)	39,709 (34,530)	44,555 (38,743)
Drugs and Medical Supplies	12,086 (10,510)	32,676 (28,414)	34,522 (30,019)	40,363 (35,098)
Non-Medical Supplies	4,946 (4,301)	4,592 (3,993)	5,119 (4,451)	5,459 (4,747)
Transport	<u>2,658 (2,311)</u>	<u>4,609 (4,060)</u>	<u>5,973 (5,194)</u>	<u>7,117 (6,189)</u>
TOTAL	38,576 (33,545)	74,440 (64,730)	85,323 (74,194)	97,494 (84,777)

measured against the outputs. The determination of cost-effectiveness would then have been more relevant.

As a further demonstration carefully selected rural centers could have been used for comparative purposes. This presupposes the ability in the design to measure the effect of change and to cost the change between the models in Areas I, II and III. The critique on the research design indicates that the measure was not specific and clear.

It was difficult to follow and interpret the tables as presented in the final draft report because they were not complete, i.e., the number of visits for each of the applicable years and the number of patients served. An example of this can be found in Table 6-11, p. 102 of the draft final report. The determination of unit costs was made using a different number of visits and an adjusted cost figure. The only reference was to Section 5 (Population) which did not help as the missing elements were number of visits to the clinic and costs for the years indicated.

Additionally, the report cited a report of costs of five rural health centers done by the Institute for Development Studies (Sussex) group (IDS) in two regions in Ghana in 1975-76. Both comparisons required adjustments due to the variance in accounting systems. The IDS study did indicate a closer similarity of cost.

IDS

Range Per Visit	2.17 to 4.32
Average Cost Per Visit	3.05

Danfa

Cost Per Visit	1975-	2.98
Cost Per Visit	1976-	3.84

**Table 6-11--Operational Costs of the Danfa
Rural Health Center and Satellites Per Unit Noted, Ce4is (Dollars)
(Draft Final Report Table)**

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Per Patient Visit	1.30 (1.13)	2.52 (2.19)	2.98 (2.59)	3.84 (3.34)
Per Person in Area I	2.49 (2.17)	4.42 (3.85)	4.75 (4.13)	5.05 (4.39)
Per Accessible Person in Area I, (85%)	2.93 (2.55)	5.20 (4.52)	5.59 (4.86)	5.94 (5.17)
Per Accessible Person in Area I, Augmented*	2.22 (1.93)	4.11 (3.57)	4.50 (3.91)	4.96 (4.31)

* 85% of Area I population
+ 5,000 resident in villages outside of Area I who used the health center and satellites on a regular basis.

The IDS report gave the Danfa Project high marks for the quality of service rendered. It is indeed unfortunate that the cost of providing this program was not captured for the planning and future development by Ghana and USAID.

Potential Savings on Operational Costs, Staff. The report cited the relatively fixed number of personnel at the health center. The report concluded that the number was excessive and could be reduced by half, for a savings of 10 percent of the operating cost of the health center. In retrospect, this conclusion could have been made operational during the project instead of being a recommendation at the conclusion.

The absence of detail to compare staffing levels in either the Danfa Project or the Centers run by the Ministry of Health precluded further probing of this issue.

Potential Savings on Operational Costs, Drugs. The final report dealt with the apparent excessive volume of anti-malaria drugs consumed in relationship to the recorded visits. The record controls to monitor this were in place; the only corrective action necessary was to make the staff aware that their activity was being monitored. The result was a substantial reduction in the reported use. This action resulted in a savings which otherwise would have caused an increase of 5 percent in total costs.

Training Costs for Staff/Danfa. The appropriateness of including all costs of the project in the calculation of total cost remains valid. However, the project reflected the cost and training only on a cumulative basis. When education and training are an integral part of an operation, their cost should be shown as overhead and allocated based upon utilization.

Health Education Program Costs. The calculation of costs for the health education component appeared adequate, however, more information would have allowed better analyses. The costs were applied equally to both Areas I and II. Since this activity related to an attempt to change behavior, it should be reflected as a cost benefit. It is recognized as a necessary part of the cost of a comprehensive program designed to improve the health status of the target population. The measure in this project was to be obtained from the health practices survey results of 1973 and 1976. The analysis of this data had not been completed at the time of this evaluation (see Table 6-12).

Family Planning Program Costs. Family planning was conducted in Areas I, II and III. The total cost of the program was stated, but specific costs were reflected only for Area I. Because of the lack of detail, it was not possible to verify the data (see Table 6-13).

The detail to measure the extended use effectiveness, i.e., the percent of acceptors who did not become pregnant for a specified period of time indicated 60 percent for females and 87 percent for males. There was no attempt to show a comparison of the cost or indices between Areas I, II and III. There was also no indication of the specific degree to which the goal of reduction in the birth rate was achieved.

In the absence of a comparison of several models and of evidence of measurable gains toward achievement of a stated goal, it was not possible to measure effectiveness.

The per capita cost for Area I for each year is shown in Table 6-13.

**Table 6-12--Final Draft Report--Annual Operating Costs
For Health Education, Cedis (Dollars)**

	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>	
Staff	11,772	(10,237)	14,035	(12,204)	17,519	(15,232)	18,783	(16,333)
Transport	4,287	(3,728)	3,410	(2,965)	4,285	(3,726)	5,437	(4,728)
Materials/Misc.	600	(522)	1,100	(957)	1,100	(957)	1,000	(870)
	<hr/>		<hr/>		<hr/>		<hr/>	
TOTAL	16,659	(14,487)	18,545	(16,126)	22,902	(19,915)	25,220	(21,931)
	<u>Area</u>		<u>Area</u>		<u>Area</u>		<u>Area</u>	
	I	II	I	II	I	II	I	II
Per Capita Cedis	.57	.72	.60	.69	.70	.81	.73	81

Table 6-13--Operational Costs of Family Planning Program

Cedis, (Dollars)

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Staff	4,517 (3,928)	6,923 (6,020)	8,865 (7,709)	8,683 (7,550)
Transportation	4,541 (3,949)	6,677 (5,806)	9,672 (8,410)	12,272 (10,671)
Attributable from Health Education	2,749 (2,390)	3,216 (2,797)	4,580 (3,983)	5,044 (4,386)
Attributable from Danfa Health Center Operations	--	--	--	2,380 (2,070)
Attributable from Amasaman Health Center Operations	--	--	749 (651)	857 (745)
Miscellaneous	300 (261)	500 (435)	600 (522)	600 (522)
Contraceptives	<u>1,961 (1,705)</u>	<u>7,363 (6,403)</u>	<u>8,495 (7,387)</u>	<u>5,509 (4,790)</u>
TOTAL	<u>14,068 (12,233)</u>	<u>24,679 (21,461)</u>	<u>32,961 (28,662)</u>	<u>35,345 (30,734)</u>
Per Capita- Cedis Area I	40.34	40.53	40.64	40.81

Cost of Area I--Comprehensive Health Care Program. Under this section the cost for the total program for the operation of the Area I comprehensive health care program reflects the accumulation of all program costs for the four year period 1973 to 1976. These are shown below (see also Table 6-14).

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>Total</u>
Cost	51,427	96,235	112,075	127,198	386,935
Per Capita	3.54	6.24	6.83	7.37*	

There is the recognition of the capital and nonrecurring training costs by the project staff; these are listed but not included in the table above. When the training costs of C209,700 are added, the total for the four year period increases to C596,635. The capital cost for the building of an estimated C125,000 depreciated over 50 years would yield a depreciation expense of C2,500 per year. This would amount to C10,000 (2,500 x 4) for the period 1973 to 1976. The total would then be C606,635.

For these calculations, the value of the cedi was held constant at C1.00 - \$0.87. When the adjusted 1976 cost is calculated at the current exchange rate, the total is C543,339, or C31.48 per capita. The adjustments suggested earlier would reflect a more realistic picture.

The expansion of the Danfa Project concept should be favorably considered by the Government of Ghana--Ministry of Health. If this recommendation is followed, a realistic plan must be developed. Its implementation in whole or in stages must be accomplished in full recognition

* Per capita extrapolated from Table 6-14.

Final Draft C127,198 ÷ C7.37 = 17.259

Table 6-14--Area I Comprehensive Health Services Program, Annual

Operating Costs, Cedis (Dollars)

	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>Total Cost 1973-1976</u>	
Danfa Health Center/ Satellites	38,576	(33,545)	74,440	(64,730)	85,323	(74,194)	97,494	(84,777)	295,833	(257,246)
Health Education	8,330	(7,243)	9,272	(8,063)	11,451	(9,957)	12,610	(10,965)	41,663	(36,228)
Family Planning	3,649	(3,173)	6,702	(5,828)	8,322	(7,237)	8,952	(7,784)	27,625	(24,022)
Plus Health Education*	1,374	(1,195)	1,608	(1,398)	2,290	(1,991)	2,522	(2,193)		
Plus Danfa Health Center	--		--		--		2,380	(2,070)		
Antimalaria Program	528	(459)	1,593	(1,385)	1,914	(1,664)	2,242	(1,950)	6,277	(5,458)
Immunization Program	--		3,346	(2,910)	3,990	(3,470)	4,656	(4,049)	11,992	(10,429)
TBA Program	344	(299)	882	(767)	1,075	(935)	1,244	(1,082)	3,545	(3,083)
TOTAL	51,427	(44,719)	96,235	(83,683)	112,075	(97,457)	127,198	(110,607)	386,935	(336,466)

* Not counted in family planning total to avoid double counting.

Table 6-15--Area I Comprehensive Health Services Program, Per Capita Operating

	Costs, Cedis (Dollars)							
	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>	
Danfa Health Center/ Satellites	2.66	(2.31)	4.83	(4.20)	5.19	(4.52)	5.65	(4.92)
Health Education	0.57	(0.50)	0.60	(0.52)	0.70	(0.61)	0.73	(0.64)
Family Planning	0.25	(0.22)	0.43	(0.38)	0.51	(0.44)	0.52	(0.45)
Plus Health Education*	0.09	(0.08)*	0.10	(0.09)*	0.14	(0.12)*	0.15	(0.13)*
Plus Danfa Health* Center	--		--		--		0.14	(0.12)*
Antimalaria Program	0.04	(0.03)	0.10	(0.09)	0.12	(0.10)	0.13	(0.11)
Immunization Program	--		0.22	(0.19)	0.24	(0.21)	0.27	(0.23)
TBA Program	0.02	(0.02)	0.06	(0.05)	0.07	(0.06)	0.07	(0.06)
Total	3.54	(3.08)	6.24	(5.43)	6.83	(5.94)	7.37	(6.41)

* Not counted in family planning as to avoid double counting.

Comprehensive Health Care Program-Area I

	Cost	<u>1973 - 1976</u>	
Operational Cost		386,935	
Training Cost		209,700	
Depreciation:			
125,000 ÷ 50 = 2,500			
(2,500 x 4)		<u>10,000</u>	
Adj. Total		606,635	
		<u>1976</u>	<u>Per Capita</u>
Cost 1976		127,198	7.37
Training Cost			
1/4 209,700		52,425	
Depreciation		<u>2,500</u>	
		182,123	10.55
<u>1979:</u> Project Cost			
2.80 = 1.00		543,339	31.48

of all the elements required. It was for this reason that the costs of capital and training were factored into the computation. It should be clear that although some elements of costs already exist within the Ministry of Health (Training) and Ministry of Economic Planning (Ghana National Family Planning), additional resources of both personnel and supplier will be needed which will add to the financial cost of the program.

Recommendations

- * Subsequent demonstration efforts should establish clear objectives with guidelines at the onset of the project to achieve measures of cost effectiveness on demonstration and research projects
- * Subsequent demonstration efforts should establish monitoring mechanisms to measure goal/objective achievement.
- * Research at AID or through subcontract should attempt to review available data/working papers of the project to determine retrospectively the degree to which this project was truly cost effective. This will be dependent upon a more complete analysis of the data
- * USAID through subcontract retrospectively review cost of operation between Areas I, II and III to determine costs of each area providing varying levels of service.

3. TRAINING

The 1975 Project Paper indicated that over the four year period the project would focus on various training activities, including participant training at UCLA and other U.S. universities, training of doctors and medical students of the Ghana Medical School and the training of all levels of primary health care workers, including traditional and community volunteer workers.

A. Participant Training

Participant training was initiated during the first phase of the project, following the 1970 project paper, with the first trainees beginning their education September 1971.

The original concept was to train five Ghanaian counterparts to the five UCLA key participants in the project, that of Project Director, Chief of Party, Epidemiologists, Biostatistician, and MCH/FP Specialist. Later it was decided that in order to develop a "critical mass" of Ghanaian expertise to assume full responsibility of the project as planned, it would be necessary to increase the number of Ghanaian participant trainees. As a result, 19 Ghanaians participated in a total of 22 training experiences during the life of the project.

The trainees came from Ministry of Health or University of Ghana, Ghana Medical School positions. After being carefully selected by GMS and MOH for their interest in the development of the Danfa program, their capabilities, potential, and background, they were seconded to GMS. Career plans were formulated prior to their U.S. training. Although most physician trainees took the UCLA core MPH one-year course, they were assigned to

produce papers on Ghanaian (Danfa) topics. Following formal courses, trainees participated in a variety of relevant field studies, at CDC Atlanta, the West Indies, England, France, Central and South America, and other parts of Africa.

Upon return to Ghana, the participant trainees served on the Danfa project in some capacity before receiving appointments (MOH or GMS) of increased responsibility, appropriate to the training received. In every case, graduates appear to have maintained their commitment to focus on the improvement of health care in rural Ghana.

Some examples of their relevant involvement:

Dr. R. Asante--currently serving as Deputy Director in the
Ministry's National Health Planning Unit,

Dr. E. Mensah--assigned as Ministry of Health Medical Officer
to the Kintampo area, where a delivery system similar to
that of Danfa has been developed (previously assigned as
Medical Officer, Danfa Project, Areas II and III),

Dr. P. Lamptey--Medical Officer, Danfa Project, Area I, prior
to returning to U.S. to pursue degree of Dr.P.H.,

Dr. H. Addy--Currently Acting Head, Department of Community
Health, Medical School, University of Science and Technology,
Kumasi (formerly Ministry of Health Advisor in MCH/Nutrition
upon return to Ghana from UCLA),

Dr. R. Amonoo-Lartson--Deputy Director of Medical Services--Ministry
of Health,

Dr. L. Osei--Currently assigned as Danfa area Medical Officer in
charge of program,

Dr. E. Osei-Tutu--Epidemiologist in WHO Schistosomiasis Project,
Eastern Region, Ghana,

Mrs. Editn (Fordjor) Tettah--Health Education, Danfa program,
GMS, DCH,

Mr. E. Quartey-Papafio--presently Community Development Consultant
to the Danfa program and lecturer at G.M.S., Department of
Community Health,

Mrs. Matilda Pappoe--after training, served as Health Educator
for Danfa Project and Health Educator, GMS, DCH. Currently
pursuing Ph.D. degree in Health Education in Canada, and

Dr. Grefard A. Ashitey--currently faculty member, GMS, DCH,
specialist in schistosomiasis control, involved in training
of GMS medical students.

It is difficult to tell whether the program is deriving direct
benefits from those who received training in data processing and records,
or whether the Danfa Project derives specific benefits of the training
provided to the Cytotechnologist at Johns Hopkins University.

The trainees who received training in Health Records/Biostatistics/
data management are currently employed by the GMS, DCH and should be
valuable participants in the processing of the massive volume of data
collected via the numerous Danfa research activities.

One trainee was appointed Statistician Programmer for the Danfa
Project, but left after a year's service to pursue additional education
and did not return.

Critique

It is a tribute to the Danfa Project that there was virtually no "brain drain" as a result of this training activity. The success of the participant program is the probable result of careful selection of the candidates, adequate field orientation, the development of career plans, the assured upward mobility after successful completion of the training, as well as job satisfaction at the higher levels of employment.

There may have been disadvantages in the concentration of training experiences at one institution, but the administrative logistic and faculty support offered on the UCLA campus for the Ghanaian students probably created a better study atmosphere in a foreign country, a factor which undoubtedly outweighed the disadvantages.

Had postgraduate training in specialized areas been provided to some of the Ghanaian physicians, rather than the general one-year MPH course, the same "critical mass" of expertise could have been achieved rendering the Ghanaians greater capability in handling their future health services/research needs.

Recommendations

- that future AID project involving participant training encourage more specialized training appropriate to the specific needs of the host country.
- that future AID projects involving participant training encourage provision of strong administrative and faculty support at the university on a personal level similar to that given by UCLA in this project.

B. Training--Ghana

Training of Medical Students. Since its establishment, the Danfa Health Center has served as a rural health training site for the University of Ghana Medical Students. All senior year students (approximately 50 students annually) spend a four-week clerkship at Danfa. Adequate living accommodations are provided on the health center grounds.

Students have the benefits of supervision by GMS Danfa faculty and the opportunity of working with experienced field nursing and ancillary support personnel (health center supervisor, nurses, midwives, health inspector, and health educators). During this experience, they are exposed to rural health problems, the socio-economic and cultural factors affecting the delivery of health care in such areas, and participate in providing innovative methods of care to successfully manage problems with an interdisciplinary approach.

The Medical Officer of the Danfa Project serves as the director of student teaching.

Critique

Prior to the development of the Danfa Health Center project, medical students' clinical training was concentrated at Korle Bu hospital facilities, with limited exposure to rural health care. There, they dealt with urban health problems primarily, although the patient population at Korle Bu has always and still includes patients travelling from the rural areas for care. At Korle Bu, the students have access to the many specialized and sophisticated specialists, services, and facilities like those found in and around any such teaching institution.

With the expansion of the teaching program to the Danfa Health Center, students now have the opportunity of gaining familiarity with rural health problems and participating in the delivery of effective services on an extended basis. It is possible that some may be motivated to return to rural areas after the completion of their education, where they can effectively serve. This is especially likely if the national primary health care strategy is implemented and supportive services are adequately distributed throughout the rural areas of Ghana.

For continued success of this training activity, it is imperative that adequate supplies, equipment, medications, vaccines, safe water, power, transportation services, and support field staff be provided.

The development of the GMS Department of Community Health, the postgraduate public health program and the activation of the Noguchi Center for tropical disease research should all contribute to a greater emphasis on public health for the medical students.

Recommendations

- that the continued clinical training of senior medical students in the Danfa program and other comprehensive rural programs be supported.
- that the medical students have opportunities during their rural health training program to participate in community development and health education programs.
- that AID continue to fund the Community Health Team Support Project and encourage the further developmental activities of the GMS as it relates to rural health services research/ demonstration and training projects.

C. Traditional Birth Attendants

The project identified and trained traditional birth attendants to participate in the organized rural health care system and to improve the skills of this group of traditional practitioners who delivered the majority of infants in the project area. The intent was to bring about a reduction in the high maternal mortality rates experienced in the villages. To achieve this objective TBAs were identified and trained by the project (a) to monitor women during the prenatal period, (b) to recognize and appropriately refer high risk women and those with complications, (c) to perform safer deliveries, (d) to provide proper umbilical cord care, (e) to promote improved maternal and child health practices and family planning in their villages, and (f) to accurately report all required birth information. Involving the TBAs in the comprehensive health care system was believed to be an acceptable low cost means of accomplishing the above while at the same time adding a new category of village health care workers to disseminate health education and family planning information.

A knowledge, attitude and practice survey provided information which was used to develop effective training programs to meet the specific needs of the group of TBAs who were often aged and illiterate.

The training program was divided into two parts: (a) the initial training period of eight 3-hour sessions held every two weeks (later modified to twice weekly 4-hour sessions for two months, and (b) continuing education and followup thereafter. Trainers were senior nurse-midwives, public health nurses, and MCH physician resource persons. Monthly refresher courses were held at a central location and the project

instituted a village-to-classroom transportation system to assure full participation. It is important to note that upon successful completion of training, TBAs received midwifery kits with appropriate supplies and certificates. The ceremony undoubtedly contributed to the prestige and acceptance of the individual TBA.

Professional nurse-midwives had the responsibility of supervising the TBAs, reviewing record books, comparing use of supplies with numbers of deliveries, monitoring referrals. Refresher course material was influenced by deficiencies noted during supervisory visits. Information recorded by the TBA was transferred to special report forms on supervisory visits and kit supplies were replenished.

The training program was begun in 1973 and to date 60 TBAs (out of a total of 68 identified) in Area I have been trained (3 are deceased). The last class for initial training in Area I completed training in March, 1975. Between May 1974 and December 1978, a total of 760 TBA deliveries have been recorded. For that group of patients, 1,480 prenatal visits were made after TBA referral to the Health Center, 60 problems referred (14 post-partum problems), 771 cord packets were replaced in kits, and 240 family planning acceptors recruited. There have been no maternal deaths reported as a result of TBA deliveries. However, two infants born with birth defects, examphillis, were reported dead after delivery by TBAs.

The training of 30 (out of 123 identified) TBAs from Area III villages was completed in December 1977. Between that date and June 1979, they recorded 126 births, with no associated maternal deaths.

TBAs in Area III are not involve in family planning activities because of apparent reluctance to accept concepts of programs.

Critique

Since it was recognized that TBAs were delivering the majority of infants in the rural areas and formally trained health manpower could not respond to all the needs, the training of traditional birth attendants seemed to be a reasonable interim approach.

If the reported statistics associated with TBA deliveries are complete and valid, their supervised activities were meeting the prescribed objectives of the training program.

Adequate supervision, regular scheduled refresher courses and recertification, monitoring of all TBA activities including deliveries and referrals, adequate kit supply, adequate referral mechanisms are all prerequisites for a successful TBA program.

Training of new TBAs is currently at a standstill although there are still over 150 in the project area who have been identified and not trained. The reason for this lull is not understood, given the programs' stated commitment to the training program.

Supervision and refresher courses continue to a limited degree because of transportation problems related to the country's current political and economic situation.

A training manual was developed by the Ghana Medical School, DCH, and UCLA School of Public Health as a result of the Danfa TBA training program. This manual is being used to varying degrees in Ministry of Health rural programs.

Recommendations

--that further analysis of the outcomes of TBA care and deliveries be considered prior to extension of TBA training in other areas.

--that TBAs trained to date (by Ministry and Danfa program) be given the necessary administrative and professional support necessary to maintain and utilize their new skills.

D. Village Health Workers

During 1976, the Danfa Project decided to locate indigenous volunteers chosen by villages to receive training to become village health workers in their own areas. The intent was to provide a new category of primary health workers directly related to the villages who could give some care to the people who may have routine health problems between visits by representatives of the conventional health team. They were to be trained to recognize problems to be referred and make those referrals, participate in the health education, malaria chemoprophylaxis and environmental sanitation activities of the village.

Criteria were established for the selection of candidates for this training which included the requirement for literacy but not necessarily the motivation and interest needed for volunteer services. Trainers included public health nurse, health inspector and health center superintendent. The first course lasted six weeks for a total of 72 hours, and the second lasted 11 weeks for a total of 110 hours of instruction. A certificate was given to candidates successfully completing the training and they were to have refresher courses once monthly. Records were to be monitored by supervisory staff to assess quality of care. Supervision was provided by the trainers, HEAs and village development committees.

A total of 20 volunteers (15 men, 5 women) from nine villages received village health worker training, which covered preventive and curative care and the health service delivery system serving the village.

Financial support for VHW was to come from the village through the village development committees. Medications and supplies were provided by the program.

The first 15 months of VHW activities in the field (January 1977 to March 1978) indicated that they delivered 361 service encounters per person in the village (a total of 4,740 visits as preventive services given, 8,818 malaria prophylaxis and 190 new family planning acceptors).

A training manual was produced as a result of this training activity by the Ghana Medical School, DCH and UCLA School of Public Health. The indigenous first-line community health worker planned to provide care throughout Ghana as described in the Ministry of Health's National Health Planning Unit document "A Primary Health Care Strategy for Ghana" is selected, trained and will function much like Danfa's village health workers, but it is not known whether the project's training manual is being used or to what degree in the regions.

Critique

The same careful consideration of village health worker candidates' knowledge attitudes and practices was not undertaken prior to the designing of training programs as was done in the case of the traditional birth attendants.

Although it is shown that the volume of VHW services was high in the first fifteen months of activities, there is no indication of the appropriateness of preventive or curative services given as referrals initiated. It is possible that poor judgment based on limited knowledge could result in practices that could pose real dangers to patients.

Supervision, refresher courses, and supplies had been limited during the past few months, seriously affecting the motivation of VHWs as evidenced by the team's difficulties in locating them during their visits to the villages.

Recognition of the need for more comprehensive training was indicated by the provision of a 110-hour course of instruction in 1978 as compared with the initial 1976 course of 72 instruction hours.

Recommendations

- that services provided and referrals initiated by VHWs be closely supervised by Health Center team members.
- that a study be undertaken to determine the appropriateness of care given by VHWs.
- that results of above activities and identification of deficiencies influence the topics of discussion at future refresher courses which should be reinstated as soon as possible.
- that professional support be available through a strengthening of linkages with the organized health care system serving the villages.

E. Other Field Training

A number of Ghanaians received training by the Project in such areas as field survey methods, community development, and data processing as various service and research activities were implemented. Approximately 200 individuals--designated as research assistants--received such training. They ranged from college graduate supervisors through mid-level supervisors through mid-level supervisors to 0-level field workers.

Critique

The evaluation team was concerned that specific skills learned as Danfa Project survey field personnel were not applicable for employment in other areas after the termination of the project's many research activities. It was learned, however, that these personnel were used in more than one specific activity, thereby providing them with more generalized experience.

Many of these field workers remain on the GMS and DHC staff to assist in other medical-social research activities; others will probably be needed after the activation of the Noguchi Tropical Disease Research Center, and others have been accepted by other agencies.

HEAs (see Section 2.C, Staffing).

4. INSTITUTIONAL DEVELOPMENT

A. Program Continuation--Danfa

At the outset of the project (according to 1975 Project Paper), it was decided that there would be a joint arrangement between the University of Ghana Medical School, Department of Community Health and the University of California, Los Angeles School of Public Health. Through these two institutions, there would be UCLA and GMS counterparts so that by the termination of the project, there would be Ghanaian technical expertise to direct the continuing program, including health services research. Positions with both U.S. and Ghanaian counterparts were Co-Director, Chief of Party, Epidemiologist, MCH/FP specialist, Systems Analyst, Health Education specialist. Participant training was tailored to meet the needs of GMS to accept total responsibility for continuation of activities begun through the project. GMS personnel together with Ministry of Health personnel seconded to the GMS were involved in participant training programs to achieve this goal. It was anticipated that through this mechanism, emphasis would be placed on "strengthening the framework of research and training for internal expansion and improvement of research capabilities and training capacity" (1975, Project Paper, p. 41, A,1).

In-country capability to provide the necessary operational and research activities was achieved through a variety of training programs (survey and research personnel, health education assistants, traditional birth attendants, village health workers).

It has been stated that Danfa program continuation is dependent upon Ministry of Health cooperation and support. From the Ministry came specialists who were seconded to the Danfa program; the Ministry also provided medical supplies (drugs, vaccines). It should be noted here that Ministry of Economic Planning gave support in consultation (Ghana National Family Planning Program) and its family planning supplies which were provided by USAID.

Critique

The project's co-director provided strong leadership and work on a level with UCLA's co-director during the last four years of the program. His commitment to the delivery of effective comprehensive rural health services through an organized system is shared by members of his staff assigned to the program.

Most of the participant trainees have served and some continue to serve in some phase of Danfa's operation. The present medical officer for the program received his MPH training at UCLA through the project.

Field training of some TBAs, HEAs and VHWs has been completed, and most of those are still working in the project area under the supervision of health center staff, with consultation from GMS staff. The framework exists for identifying candidates, conducting training, re-training, supervision, and monitoring of their services, based on project activities and research in these areas. The development of training manuals allow for standardizations of these processes. Experienced research assistants (University of Ghana, GMS) are available for conducting field surveys and research activities deemed appropriate and necessary in the future.

The installation of the Wang computer in Ghana Medical School, DCH and the completion of the training of specialists in data processing and data management should result in in-country capability to complete the analysis and interpretation of data collected through this project.

The continued success and effectiveness of not only the Danfa program, but the Ministry of Health's primary care program as well depends, of course, on a stable economic environment which commits the financial and logistic support necessary to ensure a continuous flow of supplies and equipment to the field.

Recommendations

- that linkages between the Government of Ghana and the Ghana Medical School, Department of Community Health (Danfa program) not only be continued, but strengthened.
- that the University of Ghana, Ghana Medical School complete the analysis and interpretation of the accumulated data from the project on a timely basis and make findings available to the Ministry of Health's planning unit.
- that the Ghana Medical School and Ministry of Health continue to build the existing positive working relationship that has developed using the unique but interdependent resources in a concerted effort toward providing a comprehensive health care delivery program that reaches the majority of Ghanaians.

B. Linkages with Other Agencies

Throughout the term of the project there has been relevant high level interaction with other Ghanaian organizations and agencies.

Ministry of Health. Ministry of Health involvement with the

Danfa Project had included:

- (a) participation in the Danfa Policy Advisory Committee (formed to foster collaboration, optimal attainment of project goals, information flow;
- (b) participation in annual project review meetings;
- (c) seconding of specialists to Danfa program;
- (d) identifying appropriate MOH candidates for participant training;
- (e) appointments of participant trainees who had completed their educational programs to key administrative and planning positions in the Ministry;
- (f) assignment of MOH staff with Danfa experience to areas in which they can use their expertise to develop field programs;
- (g) planned utilization of Danfa findings in developing and implementing primary health care program for Ghana (National Health Planning Unit);
- (h) utilization of training manuals produced by the project.

Ministry of Economic Planning (Ghana National Family Planning

Program). Ministry of Economic Planning involvement with Danfa included:

- (a) seconding of specialists;
- (b) participation with GMS in the production of the family planning manuals A and B which have been adopted for use by the Ministry of Health;

- (c) provision of conduit through which contraceptive supplies flowed through from USAID;
- (d) participation in Danfa Policy Advisory Committee.

Ministry of Social Welfare and Community Development. Ministry of Social Welfare and Community Development involvement included:

- (a) assistance of community development officers in working with HEAs to form village development committees where they did not exist;
- (b) assistance of CDOs in working with project HEAs in interfacing with existing village development committees.

Ministry of Education. Ministry of Education personnel (teachers) were used as volunteers in the distribution of malaria chemoprophylactics to school age children.

Ministry of Education involvement included:

- (a) distribution of malaria prophylactics to school age children by teachers in the project area;
- (b) participation of teachers in the polio (lameness) survey of the project area;
- (c) participation of teachers in the project's school health education activities.

Nurses and Midwives Council. In February 1979, the Nurses and Midwives Council approved the project's (GNFPP) Manual B into the curricula of Midwifery Schools.

Korle Bu and Other Project Area Hospitals. Korle Bu hospital as well as other project area hospitals accepted referrals from the Danfa health staff and field personnel.

ISSER. Earlier in the project, University of Ghana's Institute of Statistical, Social and Economic Research (ISSER) accepted a contract to be responsible for analysis of socio-economic data.

The report states that the analysis of the voluminous socio-economic data was pertinent to the final evaluation of the Danfa data. The project has now terminated and the analysis not yet forthcoming.

Recommendation

- that ISSER be required to fulfill the aims of their Danfa contract to analyze socio-economic data, or if not, submitted by the time the Wang Computer is installed at GMS.
- that the data be returned to GMS for processing, analysis and interpretation.

Critique

The project, through the interrelationships with Government of Ghana and other organizations, had the advantage of technical expertise lent to the program in a variety of ways. In addition, the linkages facilitated the transfer of Danfa findings which were replicable in other areas.

The linkages to project area hospitals accepting referrals from Danfa health center staff and field personnel could be strengthened. Referral forms were taken by patients to the institutions, but feedback in the way of diagnosis and recommendations was not always forthcoming.

Although there were many formal and informal ties with the Ministry, which was as it should be given the implications for identifying rural Ghanaian health care problems and services/systems to resolve them,

there is some question as to whether involvement was meaningful and sincere.

Recommendations

- that linkages with relevant Government of Ghana agencies be continued and strengthened wherever possible;
- that key Danfa staff and high level hospital representatives develop mechanisms to ensure feedback of pertinent patient information and referrals;
- that, upon completion of the analysis and interpretation of the accumulated Danfa data, findings are promptly disseminated to all relevant agencies;
- that the Danfa program continue to relate to a multiple relevant agency advisory committee.

C. Data Processing/Analysis

As stated in the Health Services Research section, the Ghana Medical School is currently awaiting the installation of a Wang computer. This computer was purchased for the Department of Community Health with project funds to enable that department to process the accumulated Danfa data. At present, two Ghanaian data processors are in Boston receiving training on Wang Computers. The Wang computer was selected because it has the capability of handling this type of data processing and because the company has offices and technical personnel in Ghana for adjustments and repairs without unnecessary delays.

Project data at UCLA is being sent to Boston to be transferred to mini discs compatible with the Wang computer.

Earlier in the project, Danfa funds purchased a tape drive to facilitate the processing of program data at the University of Ghana (Legon) on their IBM computer.

Personnel have been trained through the project in data processing and management, and have had previous experience working on Danfa data.

Critique and Recommendations

As soon as the Wang Computer is installed at GMS and training completed in Boston, there should be no delay in beginning the process of evaluating the data from the various Danfa research programs.

The director, together with Ministry of Health, especially Planning Unit representatives should consider the priority order of studies to be analyzed.

The full impact of the Danfa Project cannot possibly be determined until the data analysis and interpretation is completed. It would be tragic to not fully realize the benefits from the years of effort of so many experts and the expenditure of so many USAID dollars and Ghanaian Cedis.

D. UCLA Institutional Development

Institutional development is an objective equally relevant to both GMS and UCLA. Specially--how has UCLA enhanced its own faculty capability to conduct similar projects as a result of the Danfa Project? One index of this capability is the number of UCLA personnel participating in the project that were retained by the SPH following the termination of the project.

While UCLA has a firm commitment to international activities and selected excellent people to participate in the Danfa Project, it failed to retain any of the faculty who participated as onsite advisors during the ten years of the project. At the end of the project period, all advisors had either left for other universities or organizations--or were in the process of leaving.

Recommendations

AID design subsequent long-term contracts involving U.S. universities in such a way to ensure that resident advisors are selected the tenure faculty--or that resident advisors be given tenure track positions at the termination of the project. This will ensure the development of a "critical mass" for subsequent projects.

5. PROJECT MANAGEMENT

Project management considers various aspects of project goals, the division of responsibility, the decisionmaking structure, and reporting procedures. Using the criteria of adequacy, appropriateness, efficiency, effectiveness, and transferability as a general framework, the evaluation attempts to assess the overall management of the project.

Project goals. The ultimate goal, a concept originated at the University of Ghana Medical School, was to "enable the Government of Ghana to extend and improve rural health and family planning services in a rational manner," and was based on an increasing realization that the rural population constituted 70 percent of the total population and was underserved in the meeting of health needs. This realization resulted in the development of a health services delivery program directed at the rural population. Despite expressed agreement by various parties on this goal, (e.g., MOH, USAID/G, UCLA, GMS) the various service delivery, research and training activities were often in conflict for limited resources.

Project responsibility. The Danfa Project was a combined effort with each party carrying responsibility which would theoretically lead to the ultimate objective. The key participants were: (a) the University of Ghana Medical School, Department of Community Health (GMS/DCH), (b) Ministry of Health personnel seconded to the project, (c) the University of California, Los Angeles, School of Public Health (UCLA-SPH), and (d) the United States Agency for International Development/Ghana (USAID/G).

The USAID/G had the responsibility to receive the initial project paper and present this to USAID/W for review and approval. Once funded USAID/G developed the necessary contract documents, and monitored and evaluated the project during its tenure. Through a special arrangement local currency budget was handled within GMS.

Decision making. The overall project administration was shared by both UCLA and GMS and designed to be a truly collaborative effort, with each party taking primary responsibility for particular areas of the project. When conflicts did arise, it was well understood that the decision of the host country prevailed.

Reporting. Reporting occurred by way of periodic meetings of UCLA and GMS personnel to resolve issues, report progress, and state plans for the future activities. Regular written reports were submitted to USAID/G and all interested parties. The project conducted a yearly seminar in which past activities and future plans were presented and discussed; all relevant parties were invited and the proceedings published.

Critique

Overall, the management of the project was relatively successful, given its time, scope and complexity. While management specific to the major project components are discussed under separate headings, several observations are generic to all three components and are presented below.

--While the objectives of the evaluation was not to examine the detailed financial accounting procedures of the project, it is important to note that UCLA established a sound financial reporting structure between the two universities. Moreover, decisions were made with strict adherence to the legal interpretation of the contract.

- Managerial/accountability relationships between UCLA-GMS and USAID/G were confused and ill-defined. This problem may in part have resulted from the fact that the project exceeded the tenure of most USAID/G staff and thus tended to have a dynamic of its own--independent of mission operations.
- The project suffered, and in fact continues to suffer, from unattainable expectations. The project attempted a great number of service, research, and training activities and consumed a great deal of money, thus raising expectations beyond any reasonable ability to meet these expectations. The increasing level of expectations were continually exacerbated by the project's multiple objectives, i.e., teaching, service, education, as well as the diversity of disciplines involved in its operations.
- The Ghana Medical School succeeded in incorporating the Danfa project as part of its ongoing departmental activities. This is particularly important since it assured the continuation of the project after its formal termination.

Institutional Development. The managerial structure failed to define the interrelationships of its various health, research-evaluation and training activities to overall institutional development objectives. Specifically, the project activities were largely developed without the aid of an overall plan or model--or full consideration of their impact on institutional development objectives.

Health Services Delivery/Evaluation. The health services delivery which is the heart of the project and the area of prime responsibility for the Ghana Medical School is impressive. The project has demonstrated

its ability to deliver services despite very difficult political and economic circumstances. Moreover, the patients in the service areas expressed great satisfaction with the service program. Obviously, their desire is for regular visits and, preferably, more frequent visits. The village is served by the village health worker; if the village health worker cannot provide needed care, patients must travel to Danfa.

Among the several managerial considerations to assure that the health service delivery system continues to be successful and can be replicated is a) that vehicles are operational and b) medical supplies and equipment continue to be available. Much effort was expended by the project to insure that these needs were satisfied. The evaluation team observed the anxiety of patients and staff--when regular service was interrupted due to petroleum and spare part problems; similar anxiety and frustration resulted from the unavailability of medical supplies.

On the research/evaluation side, the project management aspects was far more difficult. As detailed in prior sections, the project failed to manage its data analysis in a way that would insure maximum benefit to the project or to other policy decisions within Ghana. For example, data processing delays have seriously limited the use of relevant data to the development of the national primary care program. Factors contributing to this problem include the failure to identify a Ghanaian counterparts to the UCLA health systems analysts, equipment shortages, misperceptions, etc., as detailed in previous sections.

As noted in the review of the cost effectiveness section of the evaluation, the project failed to provide as detailed an analysis of cost as could have been done to measure, and determine or demonstrate cost

effectiveness. The combined lack of detailed cost data and the lack of programmatic data analysis limited the potential for an accurate determination of overall cost effectiveness.

Training. The training effort both in Ghana and at UCLA were generally well managed. The training program achieved its objectives and also provided the capability at the Ghana Medical School and the Ministry of Health for a sound basis for continued program development. Individuals trained by the Danfa project are now in key positions in the Ministry of Health, the Ghana Medical School Department of Community Health, as well as staffing the Danfa project. This training was an ongoing effort and needs to be continued and supported as the Ministry of Health embarks on its national primary care program.

Given the capabilities of the present staff, it is appropriate that consideration be given to future training of Ghanaians in various aspects of public health. Training outside Ghana should be done only when such skills are not available or its capacity to train will severely limit the ability to expand the program. Additional training needs are in the areas of health management and basic health services research. The continued growth of the country's health structure should consider non-M.D. managers so as to maximize the effective use of scarce physician manpower.

Recommendations

In subsequent large scale demonstration projects AID should:

- Establish clear responsibility of each party to the contract.
- Establish USAID responsibility for monitoring activity in project documents and contracts.

- Establish clear goals and objectives.
- Establish a critical path analysis and use this as a guide to assess project achievement.
- Establish an ongoing reporting mechanism which reflects the degree of goal/objective accomplishment in measurable terms.
- Establish thresholds which will require an indepth analysis of problems when expected results are not achieved.
- Establish a method for assurance of continuity by USAID in monitoring--particularly long-term projects.
- Establish priorities for funding which will maximize the use of available resource in developing countries. Consideration needs to be given to sector planning such that the cumulative results of developmental activities will have a significant impact on the overall welfare of the country.

APPENDICES

APPENDIX A

DANFA PROJECT--TIME TABLE

1966-67	Organization of Danfa Project began--GMS
1969	UCLA--three phase feasibility study
1970	Opening Danfa Health Center
4/70	GMS-USAID/G--Project Agreement signed
5/70	UCLA-USAID/G--first project paper signed
8/70	UCLA first team arrived in Ghana
1971	First satellite--Abokobi Village Second satellite--Oyibi Village
1973	Third satellite--Berekuso Village
1975	(1) Policy Advisory Committee Established (2) First major evaluation of project
1976	Second Project Paper adopted the Objectives of APHA evaluation team
1977	UCLA-Departure of family planning staff/Health Systems Analyst
1978	UCLA departure of Chief of Party/Administrative Assistant

APPENDIX B

**Report from Visit to UCLA and
Discussion with Faculty and
Staff Concerning Danfa Project.**

F.G. Moore

A. Kaluzny

July 22-25, 1979

A. Description and Assessment of the Faculty Assistance UCLA Provided Danfa Project

UCLA provided the Danfa Project a total of 5 resident advisors; 2 health educators (J. Cannon 1970-72, W. Ward 1972-76), a MCH/FP physician (Nicholas 1972-77), an epidemiologist (Belcher 1970-76), a system analyst (Blumenfeld), and a Chief of Party (Lourie 1970-76). In addition to these faculty, a number of TDY faculty were involved early in the project, e.g., Karl Hopkins, Computer support personnel and Administrative personnel to establish appropriate and compatible accounting systems.

The qualifications of the faculty and their past experience, etc., were outstanding, moreover the continuity of critical actors, e.g., Lourie is most impressive and provided important continuity in the project that was not matched by the Ghanaian counterparts. Several problems: First, while the project was truly comprehensive there were simply too many UCLA faculty working in host country on the project. The size of the project and the number of UCLA faculty tended to overpower the CMS/Department of Community Health. Secondly, the number of UCLA in-country advisors added to the cost of the project, e.g., living allowances, etc. Finally the number of UCLA advisors, each with their own area of expertise and requests for data tended to incrementally expand the extra data collection effort beyond their own ability to fully analyze the collected data before the end of the project.

B. Determine the Appropriateness, and Quality of UCLA Data Processing System

The UCLA data processing system is outstanding. The difficulty in processing data centers not on the UCLA data processing capacity, but in a

complex political and administrative set of factors involving

- (1) a Ghanaian expectation that all data was to be processed in Ghana. Thus a great deal of time was spent trying to expand the Ghanaian computer capacity before it was finally realized that the data had to be processed at UCLA.
- (2) a reluctance of UCLA/Danfa Project funded faculty to process data without the Ghanaian counterparts. Thus many months passed in which UCLA faculty were waiting for Ghanaian colleague representatives to arrive and collaborate in data analysis. An alternate explanation and less charitable is that UCLA faculty left or were involved in leaving, thus not having sufficient time to devote to data analyses and interpretation.

C. Determine whether the Processing Equipment procured under the project was appropriate and expeditiously handled.

Two types of data processing equipment were purchased. The first was the tape drive unit which was to expand the core of the Ghanaian IBM. While the purchase was expeditiously handled, the delays evidently centered around the installation of the unit. Payment was withheld by UCLA until the unit was operational.

The second equipment purchased was the Wang computer which will be operational at the GMS/DCH by October, 1979. The unit was selected for several reasons: (a) comparable with IBM equipment, (b) provides training--in fact two Ghanaians are currently in Boston for training, (c) Wang has maintenance personnel located in Accra.

D. An Assessment of the Effectiveness and Suitability to Project Needs of the Administrative/Organizational Arrangement.

The project was administratively located within the Department of International Health, School of Public Health at UCLA. It was periodically reviewed and approved by CICS which attempted to relate the project to various UCLA faculty with international interests and expertise. Within the department, the project is directed by Dr. Neumann. Reporting to him is the Chief of Party, Dr. I.M. Lourie, Deputy Co-Director, Dr. Charlotte Neumann, MCH/FP Specialist, Dr. Nicholas, Systems Analyst, Dr. S. Blumenfeld, (and programmers and data researcher), Health Educator W.M. Ward, Epidemiologists, Dr. D. Belcher. In addition, assigned to the program from Dr. Neumann's office were administrative services, writers and editors, and from the Office of Coordination of Overseas Projects, an administrative person.

Administratively, the project suffered from two limitations. First, the breadth and scope of the project exceeded the internal capacity of the Department of International Health. It would appear that the project could have involved many more School of Public Health faculty if it were administered by an interdepartmental committee operating from the dean's office. Secondly, and related to the above is that the critical actors of the project, with the exception of Dr. Neumann were not tenured faculty. Thus while they were heavily involved with the project, several left the university for other positions even prior to the formal completion of the project, and the remainder (Lourie, Blumenfeld and Nicholas) will leave as of August, 1979. This is most unfortunate, particularly given the amount of data that was collected and remain to be analyzed.

E. An Assessment of the Appropriateness of the Quantity and Quality of Personnel including Short Term Consultants Hired under this Activity and Whether Personnel Fulfilled the Terms of the Contract

Two qualifications--First it would appear reasonable that UCLA should/could have involved a UCLA demographer early in the initial design of the project. While we understand that the demographic activities were part of the Ghanaian responsibility, it would appear reasonable--at least in retrospect, that UCLA should have assumed a larger share of the responsibility at least on a temporary duty basis. Secondly, while understanding the complexity of the data analyses problems at UCLA, i.e., the need to maintain true collaboration, it is still difficult to understand why more progress was not made with basic analyses (including the interpretation) when it was known at the very outset that all the UCLA faculty would be leaving the project on or before July 31, 1979.

F. Discuss Financial Management Arrangements at UCLA Giving Particular Attention to the Necessity of Grant Amendments for Extensions and Increases in Funding

The project is handled through the UCLA Grants and Contracts Office. The project evidently experienced no unusual difficulties and received its regular allocation of Amendments (as we understand the term as explained by UCLA--an amendment is simply a periodic allocation of \$). While there were periodic shifts in line items, there were no requests for increased funding although requests for extensions were made to help finalize the data analyses.

G. Discussion of the Administrative Arrangement for Training Ghanaians under the Project and the Appropriateness of Training Given

With few exceptions, participant trainees were sent to UCLA for training. Depending on the area of expertise, the majority were enrolled

in the School of Public Health and Professor Neumann functioned as either the student's primary or secondary advisor.

The MPH students were enrolled in the 1 year MPH core, however were permitted to elect courses directly relevant to the Danfa project. For example, instead of the core health administration courses, students enrolled in the planning courses in the Department of International Health to enhance the relevance of the material to the Ghanaian setting. Students were also encouraged to write papers around areas of direct relevance to the Danfa activity.

Administratively, the arrangement for dealing with Ghanaian students was quite good--in fact could be considered a model for other universities. Several problems: First, more would have been gained if students had gone to other schools of public health, besides UCLA. This would have provided a perspective that would provide a cross fertilization of ideas upon their return. Secondly--and in retrospect, it appears that more expertise was required than could be gained by offering simply the MPH core. Consideration should have been given to the two year MPH programs which would permit participant trainees to obtain greater expertise in an important areas such as epidemiology, biostatistics, finance, etc.

H. Discuss the Financial Inputs to the Training Program with Particular Stress in Overhead Rates

Overhead in this project was 19.7% which is money allocated to the university. While this seems to be a low overhead rate relative to other universities, it is important to note that the project was able to include a number of personnel which are usually considered as overhead costs, e.g., shipping clerk, financial expeditor.

I. A Discussion of the Benefits of the Danfa Project has had on UCLA's International Development.

A critical index to judge the success of institutional development in developing countries is the number of participants trained in the U.S. who return to work at their home institutions. Applying that same criterion to UCLA, i.e., the number of UCLA faculty that participated as full-time advisors in Ghana that are returned to UCLA after the termination of the project--one is dismayed to report that the faculty have left or in the process of leaving.

While UCLA has a firm commitment to international activities, it has not structured its international programs (or at least the Danfa project) in such a way as to retain faculty who were actively involved in the project. While an extremely difficult problem, a possible solution would have been to limit the number of long term UCLA resident advisors and use temporary duty faculty from the departments of epidemiology, MCH, biostatistics, administration, etc. Under this scheme, the faculty would have gained the experience of the Danfa Project and still be available after the termination of the project to participants in other African projects.

J. Discussion of Student Research Papers and Their Worth to the Body of Professional Literature.

Participant-trainees contributed significantly to the body of literature resulting from the Danfa experience, all of them relevant to the issues of developing health services in Ghana. They were co-authors in the following papers:

Addy: "Anthropometric Assessment of Nutritional Status of Young Children."

Quartey-Papafio: "The Danfa/Ghana Comprehensive Rural Health and Family Planning Project--A Community Approach."

- Ashitey: "Danfa Rural Health Centre: Its Patients and Services 1970-71."
- Osei: "Non-Group A Streptococci Ghanaian Patients with Pyoderms."
- Asante: "A Survey of Parasitic Infections in Rural Ghana."
- Asante: "Integration of Family Planning and MCH in Rural West Africa."
- Pappoe: "Education and Evaluation in an Integrated MCH/FP Project in Rural Ghana: The Danfa Project."
- Asante: "Attitudes and Practices of Traditional Birth Attendants in Rural Ghana."
- Osei: "Endemic Pyoderma in Ghana: A Survey in Rural Villages."
- Pappoe: "Impact of Family Planning Information at a Ghanaian Rural Health Post."
- Pappoe: "Perception and Management of Guinea Worm Disease Among Ghanaian Villagers: A Framework for Differential Health Planning."
- Lamptey: "The Significance of Male Contraception in Rural Ghana."
- Asuming: "An Analysis of the Characteristics of Households, Household Size, Household Heads and the Relationship Within the Households."
- Asante: "Conducting a Rural Health Survey: Experience from the Village Health Survey, Danfa Project, Ghana."
- Kwabia, Avle: "Experience in Selecting, Training and Supervising Interviewers in a Rural Health Project."
- Pappoe: "A New Approach to Extending Health Services in Rural Ghana."
- Lamptey: "A Rural Primary Health Care Program--The Danfa Experience 1970-77."
- Lamptey: "Village Based Primary Health Care in Rural Ghana: Selection, Training and Supervision of Village Health Workers."
- Lamptey: "Does Family Planning Affect the Nutritional Status of the Child."
- Amonoo-Lartson: "The Use of Operational Research in Improving Quality of Health Care."

Amonoo-Lartson: "Use of Medications and Control of Dispensing in a Rural Health Primary Care Center."

Amonoo-Lartson: "How to Plan, Organize, and Implement Rural Health Care Operational Studies."

Lamprey: "The Effect of Breastfeeding on Fertility."

Osei: "Control of Intestinal Helminthes in the Danfa Project Area."

Amonoo-Lartson: "The Use of Tracer Conditions for Evaluating the Quality of Primary Health Care in Developing Countries."

APPENDIX C

List of Individuals Consulted and Project Participants

U.C.L.A.

Dr. Alfred Neumann

Dr. Irvin Lourie

Dr. Stewart Blumenfeld

Dr. David Nicholas

Mrs. Harriet Lourie

Dr. Charlotte Neumann

Dr. Lester Breslow

Professor Coleman

Dr. Svenson

Administrative and Technical Staff and Faculty

University of Ghana--Ghana Medical School

Dr. S. Ofosu-Amaah

Dr. L. Osei

Dean H.H. Phillips

Vice-Chancellor Adjei-Bekoe

Mrs. M.B. Amonoo-Acquah

Mrs. Edith Tetteh

Mr. Allahasan Dramani

Mrs. E.M. Asante

Mr. Edward Amankwa

Mrs. M.A. Peasah

Mr. E.K. Quartey-Papafio

Mrs. Doris Richardson

Mrs. Mildred Sam

Mrs. S. Botchway

Ghana Ministry of Health

Dr. M. Adibo

Dr. R. Amonoo-Lartson

Dr. Y. Aboagye-Atta

Dr. Esther Boohene

Mrs. Mary Owusu

Dr. Benedicta M. Ababio

AID/Washington

Mr. W. Haven-North

Dr. Julius Prince

USAID/Ghana

Mr. Irvin Coker

Mr. David Levintow

Mr. Ray Martin

Mr. John Wiles

Mr. R. Ray

Mr. M. Zak

Mr. G. Graf

Support Staff

United Nations

Dr. F.T. Sai

World Health Organization

Dr. Jones

Dr. David Scott

Danfa Staff

Mr. S.M. Koku

Mr. Andrews Borteye

Mrs. Nora Azu

Staff, patients and village officials at following sites:

Danfa Health Center

Oyibi Village Satellite

Berekuso Village Satellite

Abokobi Village Satellite

Amasaman Health Facility

Danfa Project/Evaluation Team

Moses Adibo, M.D., M.P.H.*

Director
Planning Unit
Ghana Ministry of Health
Accra, Ghana

Elizabeth Bruce-Tagoe, M.D. (Public Health)
Division of Family Planning and Maternal and Child Health
Ghana Ministry of Health
Accra, Ghana

Charles De Bose, Ph.D. (AID/W--Staff)
Deputy Director/Health and Nutrition Division of the African Bureau
USAID/State Department
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Edward V. Ellis, Ph.D., M.S.P.H.
Associate Dean for Continuing Education and
Community Service and Associates
Professor of Public Health
College of Human Development
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Arnold D. Kaluzny, Ph.D.
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Ferne G. Moore, M.D., M.P.H.
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Professor of Statistics
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Elliott C. Roberts, Sr., M.B.A.
Assistant Secretary
Louisiana Department of Health and Human Resources
New Orleans, Louisiana

* Parttime consultant.