

RURAL PRIMARY HEALTH CARE:
THE NARANGWAL (INDIA), DANFA (GHANA),
AND LAMPANG (THAILAND) PROJECTS

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by

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The views and interpretations expressed in this report are those of the author and should not be attributed to the Agency for International Development.

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PREFACE

The Office of Evaluation is pleased to present this study of what the author has aptly termed three "classic" projects in rural primary health care. All three were supported by the Agency for International Development. This paper brings these three important experiments together for analysis and review.

Robert J. Berg
Associate Assistant Administrator
for Evaluation

About This Paper

Three classic projects in the area of rural primary health care are reviewed in this paper: Narangwal in India, Danfa in Ghana, and Lampang in Thailand. The Studies Division in the Agency for International Development's (AID) Office of Evaluation requested that the author compare and contrast the experiences and findings of these three projects on issues central to the development of rural health delivery systems. In addition to providing a comparative analysis, general lessons learned from these large-scale undertakings were to be summarized to provide guidance for future similar AID-assisted health projects. It is hoped that this initial synthesis of data from only three projects will lead to an examination of others and to the formulation of hypotheses concerning primary health care.

About the Author

Pamela Hunte has a Ph.D. in medical anthropology from the University of Wisconsin in Madison. She has had more than 5 years of field experience in Afghanistan, primarily in the areas of health care delivery and family planning. Dr. Hunte's recent dissertation, The Socio-cultural Context of Perinatality in Afghanistan, is a comparative study of traditional and modern beliefs and practices associated with birth in that nation.

From 1969-1971 she was a Peace Corps volunteer in Afghanistan. In addition to teaching at a boys' boarding school in the northern provincial center of Mazar Sharif, she worked as a translator/interviewer for village health studies in the Hazarajat, the mountainous central region of the country.

From 1973-1975 she was a research analyst in anthropology with Afghan Demographic Studies, an AID contract team based in the Ministry

of Planning in Kabul. In addition to training and supervising interviewers for a series of large-scale surveys conducted throughout the nation, she compiled reports dealing with Afghan family planning clinics, traditional birth attendants, and traditional methods of fertility regulation.

In 1978 she was also contracted by AID to conduct field research in Afghanistan and prepare a report concerning women and the development process in Afghanistan.

Dr. Hunte has taught anthropology at Beloit College in Wisconsin and has also conducted classes in anthropology for nurses. In 1980 she trained Peace Corps volunteers who became village health promoters in Ecuador in cross-cultural approaches to health care delivery.

At present she is working with AID's Bureau for Program and Policy Coordination, Studies Division, Office of Evaluation, on a report concerning educational projects sponsored by AID in Afghanistan.

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I am grateful for the guidance provided by Graham B. Kerr, who was with the Bureau of Program and Policy Coordination, Office of Evaluation, Studies Division, at the time of this study, along with the many valuable comments provided by Anamaria Viveros-Long and Richard Blue.

In addition, I value the many insights furnished by the individuals interviewed for the preparation of this paper, and the time they took out of their busy schedules is appreciated.

SUMMARY

This comparative analysis of three large-scale rural primary health care projects sponsored by AID includes the Narangwal Population Project in India, the Danfa Comprehensive Rural Health and Family Planning Project in Ghana, and the Lampang Health Development Project in Thailand. All three projects attempted to provide integrated modern health care to the rural poor that included mother and child health, family planning, and nutrition services. They all developed auxiliary manpower at the village level and led to the involvement of local communities in the process of improving their own health status. Each of these heavily funded projects was also designed with evaluation components to guide program and policy development in the area of primary health care.

A comparative analysis of these projects demonstrates that modern health care can be effectively extended into rural areas, that a variety of health workers can function successfully at the village level, and that community participation in these programs can be fostered. However, these costly projects also show how difficult primary health care is to implement and sustain.

A successful approach to the delivery of rural primary health care demands a strong infrastructure of medical personnel and basic facilities, together with strong community participation. A supportive network of personnel must be developed, based on a restructuring of national health care delivery systems and a reorientation of modern medical personnel towards paraprofessional activities. Community participation is vital in planning, implementing, and evaluating a project. Not only should formal village leaders, who are usually male, be involved, but female participation through more informal village leadership networks should also be encouraged. All types of traditional medical practitioners should be active participants in primary health care delivery. Even more difficult than the initial training of village health workers is maintaining ongoing communication, supporting their activities, and sustaining local-level motivation.

Research activities must remain practical if their results are to be valuable and accessible to the host governments. Elaborate research designs are too costly and time consuming for the limited gains they are likely to realize. Opportunity for timely feedback is essential. Short-term research that concentrates on intermediate impact measures rather than ultimate indicators should be encouraged. Opportunities should be provided for small-scale ongoing research to explore new approaches or problems as they arise.

Several areas of concern to the beneficiaries themselves require additional research. The following topics are of primary importance:

1. Villagers' perceptions of primary health care projects should be explored. At the community level, these perceptions are the best evaluators of what worked, what did not work, and why.
2. A more detailed examination of what factors influence community participation in various settings should be undertaken.
3. An in-depth study of village-level health workers' activities should be initiated.

This research could be undertaken in the many AID-sponsored primary health care projects now being conducted and could provide valuable feedback and guidelines for ongoing project improvement. Cross-cultural comparisons would also be of great value. Additional information may exist in other AID-sponsored project reports and documents that could be examined and compared with these findings.

With respect to Narangwal, Danfa, and Lampang, however, information about these topics was unavailable from either reports or interviews. To avoid such information gaps in the future, workshops should be held that offer a forum for the exchange of field experiences by project participants who have worked on the village level. Data assembled should then be disseminated.

Narangwal, Danfa, and Lampang are classic cases in the area of primary health care and have influenced the development of the concept itself. Their approach to rural primary health care delivery is still in need of additional refinement, however. To provide much-needed health improvement for the rural poor, AID should continue to support primary health care projects.

PROJECT DATA SHEETA. NARANGWAL, INDIA:

1. Project Title: The Narangwal Population Study: Integrated Health and Family Planning Services (or Regional Family Planning/Integration of Family Planning and Rural Health Services)
2. Project Number: 298-15-590-019-53 (Contract AID/nesa-435)
3. Location: 19 villages in three community development blocks of Ludhiana district, Punjab state, India
4. Population: approximately 35,000 (total)
5. Project Dates: 1969-1974
6. Project Funding:

AID	\$2,113,000
World Health Organization	\$50,000 per year
Indian Council of Medical Research	Rs 1,093,190 (1971-1974)
(additional funds obtained from the Merrill Fund, National Institutes of Health, private voluntary organizations and, until 1972, PL 480 sources)	
7. Responsible AID Offices: NESAs Bureau; later Asia Bureau
Office of Population
8. Contractor: Johns Hopkins University
School of Hygiene and Public Health
9. Implementing Agency: Indian Council of Medical Research
New Delhi, India

PROJECT DATA SHEETB. DANFA, GHANA:

1. Project Title: The Danfa Comprehensive Rural Health and Family Planning Project
2. Project Number: 641-0055 (also AID/CM/afr-IDA-73-14)
3. Location: approximately 300 villages, 8-50 miles north of Accra, Ghana (area=approximately 200 square miles)
4. Population: approximately 50,000-60,000 (total)
5. Project Dates: 1970-1979
6. Project Funding:

AID	\$6,118,000
UNICEF	300,000
Government of Ghana	2,511,000
7. Responsible AID Offices: USAID/Ghana
Africa Bureau
Office of Population
8. Contractor: University of California at Los Angeles
School of Public Health
9. Implementing Agency: University of Ghana Medical School
Accra, Ghana

PROJECT DATA SHEETC. LAMPANG, THAILAND

1. Project Title: The Lampang Health Development Project (previously the Development and Evaluation of Integrated Delivery Systems [DEIDS] for Health, Family Planning, and Nutrition--Thailand Sub-Project)
2. Project Number: 931-0917 (DEIDS Subproject)
APHA TA-1320
AID/csd-3423
3. Location: 592 villages in Lampang province, northern Thailand
(area=approximately 4,890 square miles)
4. Population: approximately 617,500 (total)
5. Project Dates: 1974-1981
6. Project Funding: AID \$4,698,402 (est.)
(University of Hawaii and operating budget)
Royal Thai Government 24,645,715
also American Public Health Association (APHA)/DEIDS funding; UNICEF furnished 7 small vehicles and WHO provided 100 PVC handpumps
7. Responsible AID Offices: TA/H (developed DEIDS)
ST/HEA
(transferred to Asia Bureau in 1978; then back to ST/HEA in 1979)
USAID/Thailand (recently)
8. Contractor: American Public Health Association, subcontracted to the University of Hawaii School of Public Health
9. Implementing Agency: Ministry of Public Health
Bangkok, Thailand

I. INTRODUCTION

This discussion paper presents a comparative analysis of three large-scale projects that represent a major commitment by AID to rural primary health care, and summarizes a number of lessons learned. The three projects are detailed below:

<u>Title</u>	<u>Country</u>	<u>Project dates</u>
The <u>Narangwal</u> Population Study: Integrated Health and Family Planning Services	India	1969-1974
The <u>Danfa</u> Comprehensive Rural Health and Family Planning Project	Ghana	1970-1979
The <u>Lampang</u> Health Development Project (formerly DEIDS/Thailand)	Thailand	1974-1981

The Narangwal, Danfa, and Lampang projects represent early attempts to implement complex primary health care projects in rural regions. All were initiated prior to the important International Conference on Primary Health Care in Alma Ata, USSR, in 1978. This conference advocated "health for all by the year 2000" and provided the impetus for widespread international acceptance of the concept of primary health care delivery.

The World Health Organization (WHO) has set forth the following definition of primary health care (World Health, May 1978:6):

Primary Health Care is essential health care made universally accessible to individuals and families in the community by means acceptable to them, through their full participation and at a cost that the community and the country can afford. It forms an integral part both of the country's health system of which it is the nucleus and of the overall social and economic development of the community. (emphasis added)

A number of similarities exist between the Narangwal, Danfa, and Lampang projects. The integration of mother and child health, family planning, and nutrition services was central to all three projects. The primary beneficiaries were women of reproductive age and preschool children. All three projects attempted to deliver low-cost quality care. Health-related activities in these projects have included efforts to promote health as well as efforts to cure and prevent illness. The projects were also designed to include evaluation components to furnish guidelines for program and policy development relating to primary health care.

The health situation in the countries where the projects were conducted--India, Ghana, and Thailand--was generally similar to that in many developing countries. Modern medical personnel and facilities were encapsulated in urban areas. The majority of the population, which resided in rural regions, lacked access to these modern services. In all three countries a variety of traditional medical practitioners were serving the populace and continued to do so actively even after the inception of the projects. Narangwal, Danfa, and Lampang followed basically similar approaches in their attempts to extend modern health care into rural regions, used auxiliary manpower at the periphery, heeded traditional medical practitioners, and involved local communities in the process of improving their own health status.

In addition to these general similarities, however, the Narangwal, Danfa, and Lampang projects also exhibited striking differences in their respective approaches. Thus, exact comparison between the three projects is impossible. They were conducted at different periods of time and in quite different sociocultural contexts. The stress that each project placed on research, demonstration, and training also differed. Respective project goals and objectives, design, size of target population, administration, specific service packages, implementation, type of personnel employed, major successes and failures, and other factors varied. These differences will be outlined in subsequent paragraphs.

Before dealing specifically with these projects, some basic criteria important to a successful primary health care project should be noted. The following list is far from exhaustive; it simply provides a general framework for the subsequent analysis of the three projects:¹

1. Community participation
2. Development of a trained cadre of locally recruited village health workers
3. Participation and training of traditional medical practitioners

¹ In brief, methodology for this desk evaluation involved a detailed review of project reports, publications, and other documents from Narangwal, Danfa, and Lampang. In addition, AID personnel and individuals at the various contract universities who had participated in the projects were interviewed. (See Appendixes A and B.) In this way, I was able to assemble a wealth of data, but such research does have severe limitations. Perhaps most disappointing was the lack of detailed information from both reports and interviews concerning what had actually occurred at the village level in the areas of community participation and village health-worker activities. These are crucial areas that demand onsite evaluations during the lifespan of a project and also a more thorough understanding on the part of project personnel.

4. Sustained support and supervision of village workers by modern medical personnel
5. Reorientation of modern medical personnel towards paraprofessionals
6. Development of strong but flexible networks of modern medical personnel, paraprofessionals, and traditional medical personnel
7. Balanced program of curative, preventive, and promotive activities
8. Low-cost health services
9. Close institutional affiliation with a country's Ministry of Health or other government agency responsible for health care
10. Political support for a project by government officials at national and local levels
11. Understanding of local sociocultural setting by all project personnel

These topics are reviewed below in the specific contexts of Narangwal, Danfa, and Lampang. In addition, important impact issues are addressed and lessons learned from the projects are summarized.

II. THE SOCIOCULTURAL CONTEXTS AND BASELINE INFORMATION²

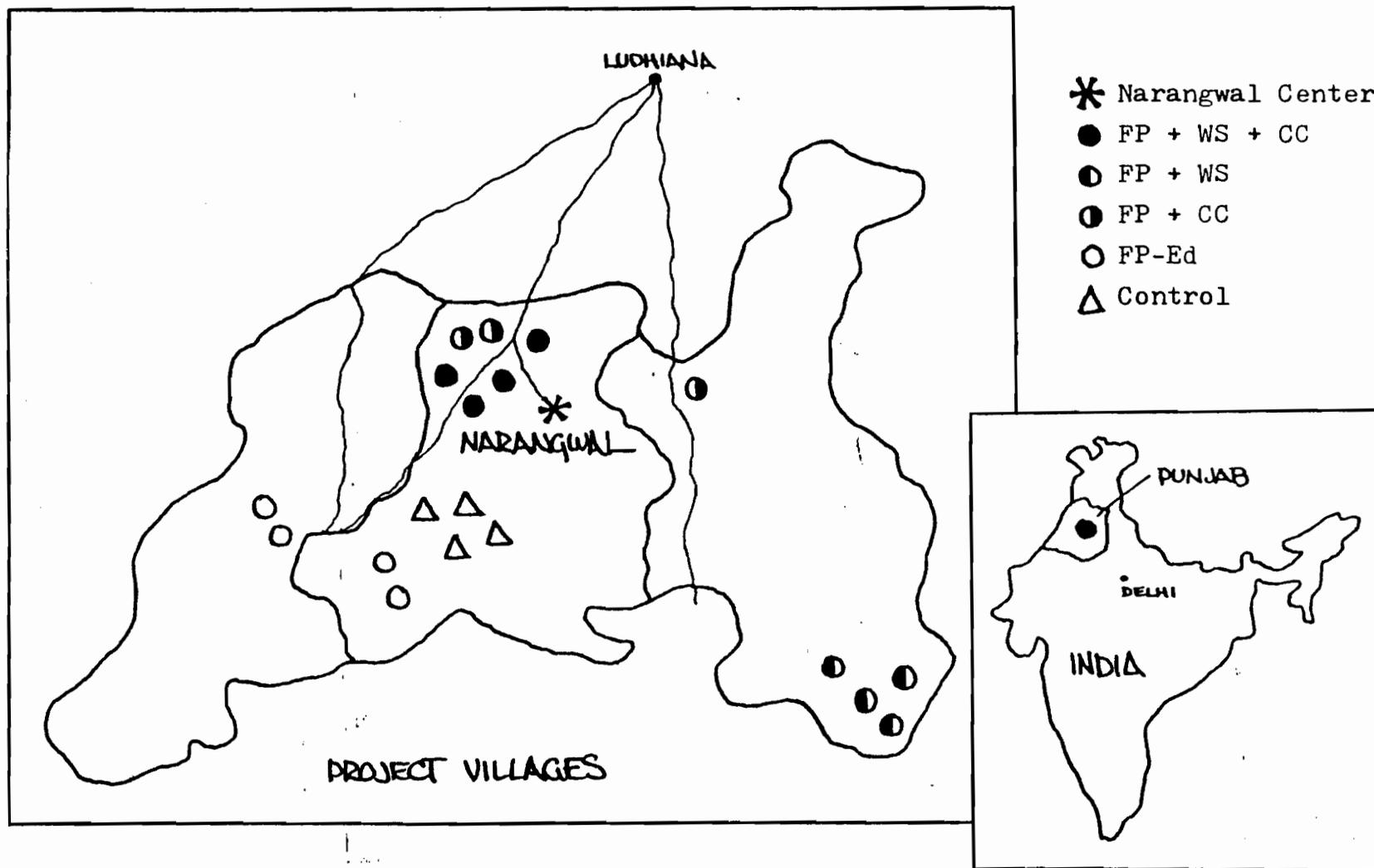
The Narangwal, Danfa, and Lampang projects were conducted in quite different sociocultural contexts, and the characteristics of their respective target populations varied considerably. Maps A, B, and C on the following pages show the exact locations of Narangwal in India, Danfa in Ghana, and Lampang in Thailand.³ Table 1 summarizes important sociocultural characteristics of the setting in which the three primary health care projects were conducted and provides some baseline information.

In the Punjab of northern India, the Narangwal project included 19 villages with a population of approximately 35,000. Danfa's target population was much larger, embracing a population of 50,000-60,000 located in

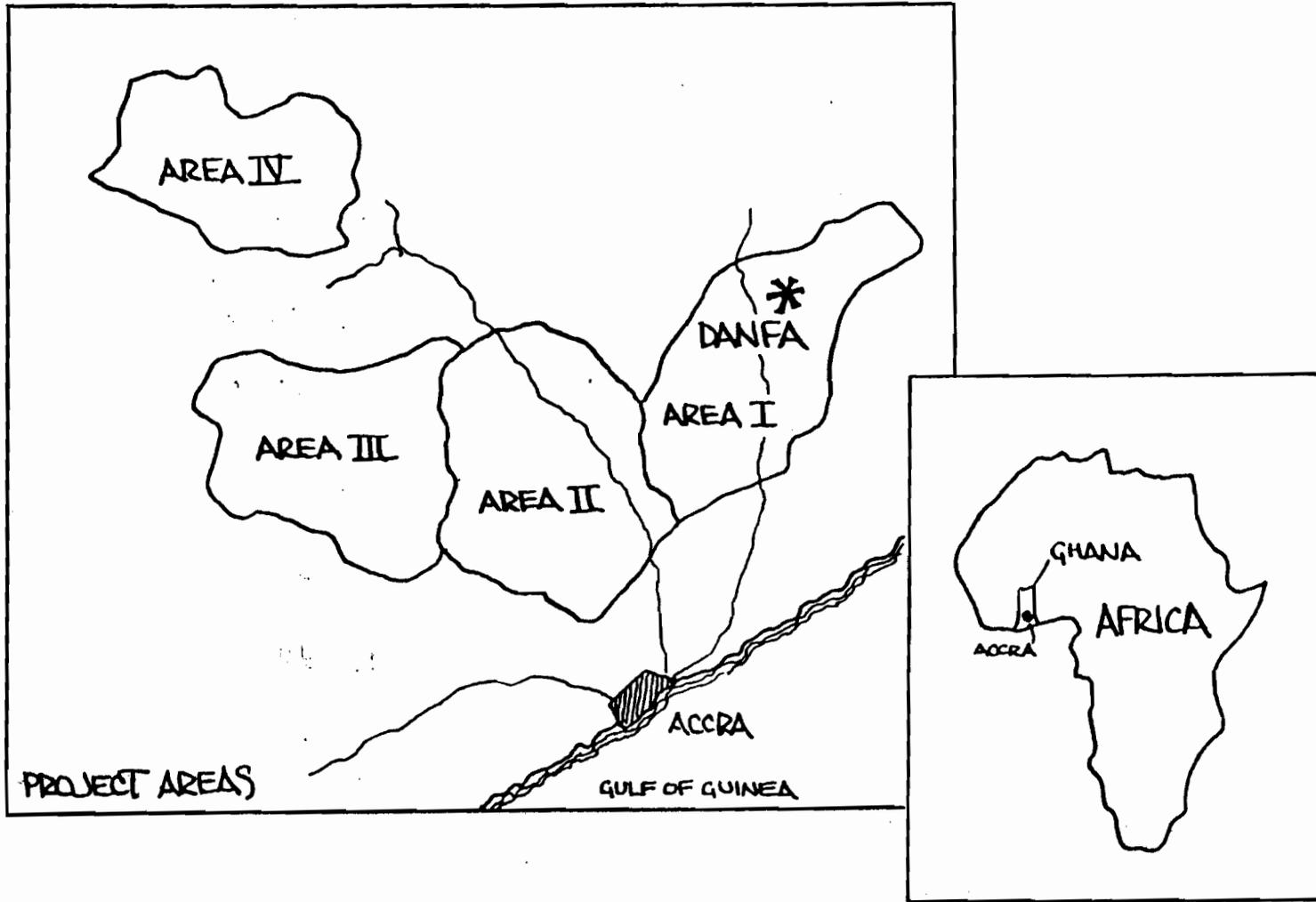
² See Appendix C for more detailed baseline information.

³ The various abbreviations appearing on the maps are described in the section concerning project design (pp. 12-14).

MAP A: THE NARANGWAL POPULATION PROJECT



MAP B THE DANFA COMPREHENSIVE RURAL HEALTH AND FAMILY PLANNING PROJECT



MAP C : THE LAMPANG HEALTH DEVELOPMENT PROJECT

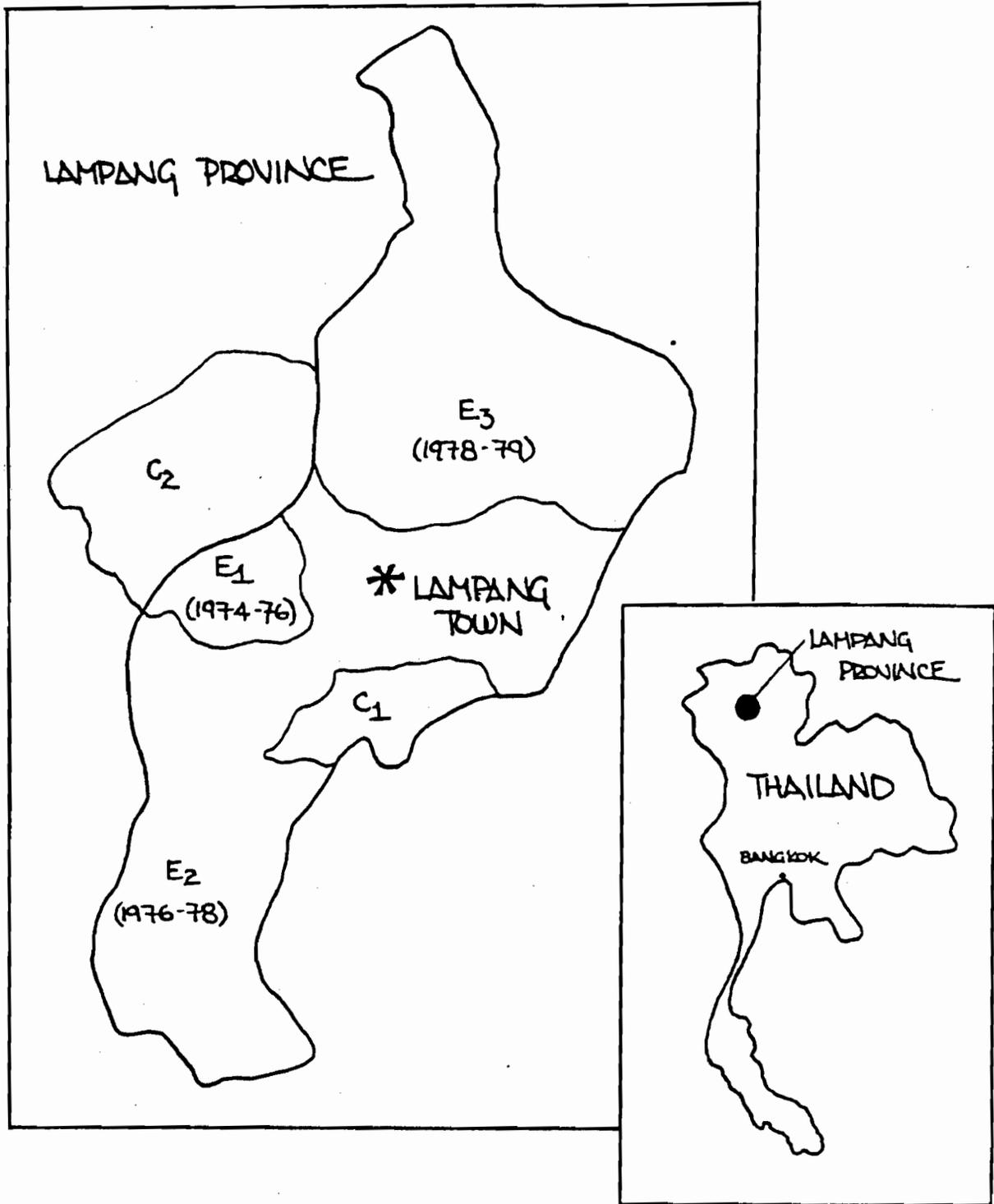


Table 1: The Sociocultural Contexts and Baseline Information

	Narangwal, India	Danfa, Ghana	Lampang, Thailand
Population	35,000	50,000-60,000	617,500
No. of Villages	19	300	592
Mean Village Population	1,350	100-400	500-1,000
Age Composition	34% under age 15	50% under age 15	37% under age 15 12% under age 6
Mean Parity	4.0	7.0-8.0	2.6-3.3
Birth Rate	35/1,000 in 1969	56/1,000 in 1972	20/1,000 in mid 1970s
% Using Modern Family Planning (before project)	17-18% of couples	7% of couples	54.8% women of reproductive age
Means of Subsistence	agriculture (wheat, cotton, etc.)	agriculture (maize, cassava, etc.)	agriculture (rice, sugarcane, etc.)
Social Organization	caste hierarchy	clan organization	village kinship
Religion	95% Sikh 5% Hindu	53% Christian 31% "traditional" 16% other	Theravada Buddhist
Literacy/Schooling	40% high-caste heads of household literate; 25% low-caste heads of household literate	44% adults attended school (17% females over 15 literate)	79.1% literate
Water Source	90% household pumps	seasonal rainfall, streams, stagnant ponds	50% household wells
Major Health Problems	respiratory ailments, infectious and parasitic illnesses (diarrhea, fever, etc.), digestive problems	infectious diseases (malaria, measles, diarrhea), respiratory ailments, skin infections, guinea worm	diarrhea, respiratory illnesses, digestive problems, fever

300 villages in southern Ghana. In comparison, the large Lampang project encompassed a whole province in northern Thailand, 592 villages with a population of about 617,500.

Although all three settings included village communities engaged in subsistence agriculture, they differed in type of social organization and degree of socioeconomic stratification. Narangwal's villages were organized strictly according to caste hierarchy, Danfa's communities were based upon clan organization, and Lampang's upon village kinship relations. In general, there was more socioeconomic stratification within individual communities at Narangwal than at Danfa or Lampang.

Lampang was somewhat more advanced in general development than was Narangwal or Danfa. About 79 percent of the total population of Lampang province was literate. Only 44 percent of Danfa's adults had attended school, and only 17 percent of females over 15 were literate. At Narangwal, 40 percent of the high-caste heads of household were literate, whereas only 25 percent of the low-caste heads of household could read and write. Baseline data also show that the birth rate was lowest for Lampang. Lampang's birth rate was 20 per 1,000 in the mid 1970s, compared to Narangwal's rate of 35 per 1,000 in 1969 and Danfa's high figure of 56 per 1,000 in 1972. In addition, a significantly greater proportion of Lampang's populace (54.8 percent) used modern contraceptive methods prior to project implementation than did Narangwal's (17-18 percent) or Danfa's (7 percent).

III. BACKGROUND HISTORY AND ADMINISTRATIVE ARRANGEMENTS⁴

The Narangwal Population Project was the last in a series of research projects conducted by the Rural Health Research Center (RHRC) which had been located at Narangwal since 1961. The RHRC was affiliated with Ludhiana Christian Medical College and received technical support from the Johns Hopkins University, School of Hygiene and Public Health. Impetus for this project came from the Indian Minister of Public Health and Family Planning who in 1964 suggested that the RHRC undertake research concerning the integration of health and family planning services. The implementing agency was the Indian Council of Medical Research (ICMR) in Delhi.

The Danfa Comprehensive Rural Health and Family Planning Project was a service, research, and training project that was first initiated by the University of Ghana Medical School in 1966 as a rural research and training site for its medical students. Beginning in 1970 the University of California at Los Angeles (UCLA) School of Public Health provided technical assistance. The implementing agency was the University of Ghana Medical School in Accra.

⁴ See Appendix D for more extensive background information.

The Lampang Health Development Project was the only subproject of an interregional, AID-sponsored Development and Evaluation of Integrated Delivery Systems (DEIDS) program ever to be implemented. The American Public Health Association (APHA) was contracted to administer this program, and the School of Public Health of the University of Hawaii was subcontracted to provide technical assistance to develop, demonstrate, and evaluate a large-scale health delivery system in Thailand. The implementing agency was the Ministry of Public Health in Bangkok.

Narangwal, Danfa, and Lampang as AID-sponsored projects all resulted from a basic question concerning how family planning can best be delivered: (1) as part of an integrated package of health, family planning, and nutrition services; or (2) as a freestanding family planning service. This topic continues to be debated even today by AID personnel, American academicians, and host nationals.

Strong national identification by the host country has occurred with all three projects--on different levels, however.

The Narangwal research project was relatively small and not directly linked to the Indian Ministry of Health and Family Planning. The esprit de corps of the large Indian staff and their identification with the individual project was extremely high. At times, however, Narangwal seemed to be a world unto itself, and it is unfortunate that a stronger institutional base was not created by the government.

Primary identification of the Danfa project was with the Ghana Medical School. As in the case of Narangwal, formal ties with the Ministry of Health were lacking. When its Ghanaian founder and director, F. T. Sai, resigned in 1972, many Ghanaians associated Danfa with him (both positively and negatively), and it took some time to create a new identity for the project. To its credit, it has survived many changes in government.

In contrast to those in Narangwal and Danfa, the massive Lampang project was administered by the Department of Health in the Ministry of Public Health itself. A major problem of Lampang was the very cumbersome administrative arrangements among various bureaus in AID/Washington, APHA, the University of Hawaii, and the Royal Thai Government. When it became apparent that the interregionally oriented DEIDS program could not be carried out, APHA's coordinating role became largely unnecessary. This arrangement should have been altered to meet the existing needs; instead, an attempt was made to continue with one "interregional" site. This situation has led to the alienation of AID/Bangkok, which had not been involved with Lampang to any great extent until recently. More important, with so many administrators, the Thais themselves often received conflicting advice. They were often left with the question: Is the intent of this project to benefit Thailand, or is there another unspoken aim?

IV. PROJECT GOALS AND OBJECTIVES

The goals and objectives of the three projects varied considerably; each project was very multidimensional in its approach. A common objective of all three, however, was to provide a model health care delivery scheme from which host governments could glean information for later implementation elsewhere. More specific goals and objectives are listed below.

A. NARANGWAL

The broad goal of this research project was to see whether and to what extent particular kinds of health measures would promote greater and more effective practice of family planning.

Main Objectives

1. Test, in an experimental field situation, hypotheses related to the effect that the delivery of combined health and family planning services will have on family planning attitudes, acceptance, and practice.
2. Develop an effective model of combined health and family planning services that could serve as a prototype for rural demonstration projects and ultimately provide a basis for widespread application in government health services.

Additional Objectives

1. Conduct research on the epidemiology of reproduction, the conditions determining the effective use of contraceptives, and the complications associated with specific contraceptive methods.
2. Analyze the effect of changing economic expectations and other possible motivating factors on family planning practice.
3. Further refine methods of measuring service program inputs and relate these input measurements to the outcomes of the service programs by using functional analysis techniques (Rural Health Research Center, 1975).

B. DANFA

The goal of the Danfa project was to assist in initiating a demonstration rural family health program that would help improve the health and welfare of the people, especially in rural areas.

Objectives (1970-1975)

1. Investigate the state of the rural community and the factors associated with effective participation in health care programs.
2. Undertake research on the most efficient means of using available manpower and other resources in the operation of comprehensive rural health services centered on health posts.
3. Train doctors, sanitarians, midwives, community health nurses, and other health personnel, both separately and in teams, for their role in rural health work.
4. Provide manpower oriented and equipped to handle the problems of the community.

NOTE: Following an external evaluation report in 1975, much of Danfa's research was deemphasized and a set of new objectives was adopted.

Objectives (1976-1979)

1. Institutional Development and Training: strengthen the institutional capability of the Ghana Medical School to conduct research and training of doctors and other health workers in the delivery of rural health and family planning services.
2. Information Transfer: transfer information derived from project activities to relevant Government of Ghana agencies on an ongoing basis.
3. Operational Research in Health and Family Planning: demonstrate several different health care models that include family planning as an integrated component compatible with the Ghanaian context.
4. Epidemiological Investigation: investigate the state of a rural Ghanaian community, concentrating on factors associated with health and family planning behavior (Danfa Project Personnel, 1979).

C. LAMPANG

The ultimate goal of the Lampang project is to improve the health status of the population of Lampang province.

Objectives

1. Expand health care coverage to at least two-thirds of the rural population, especially women in their childbearing years and pre-school-age children, with an emphasis on family planning, nutrition, and child health services.
2. Establish a model, integrated provincial health service delivery system that extends curative-preventive-promotive health services to every subdistrict health center, and establish preventive-promotive health services in every village, using trained village health volunteers.
3. Establish a provincial health care system that is cost-effective (lower cost per service unit) and whose key features can be replicated nationwide within the limitations of Royal Thai Government resources (Lampang Project Personnel, 1979).

V. PROJECT DESIGN

The emphasis placed upon research or demonstration varied among the Narangwal, Danfa, and Lampang projects. Narangwal stressed a strict research design. Danfa began with a strong research component and later became more of a demonstration project. Lampang was mainly a demonstration project from its beginning.

The Narangwal project dealt with a small population and followed a strict research design with differences in service delivery between individual villages. In contrast, the Lampang project dealt with a whole province's population, worked within (and altered) the government's health care delivery infrastructure, and attempted to deliver uniform services throughout. The Danfa project began with differences in service delivery among four areas, but later changed to a more homogeneous project design.

A. NARANGWAL

A basic hypothesis tested by the Narangwal research project was that attitudes towards, acceptance, and practice of family planning will improve when combined with health services. In the research design of Narangwal,

19 villages in the Punjab were assigned to five different groups and given various packages of services (Map A, page 4). Services included varying combinations of family planning (FP), women's services (WS), and child care (CC).⁵

Group 1 received FP + WS + CC	(FPWSCC)
Group 2 received FP + WS	(FPWS)
Group 3 received FP + CC	(CC)
Group 4 received FP Education	(FPed)
Group 5 was a control group	(C)

It was hypothesized that contraceptive practice would be greatest in Group 1, and that the incidence of family planning in Groups 2 and 3 would be greater than in Group 4 but less than in Group 1. Cross-sectional and longitudinal surveys were conducted. Final analysis indicated that approximately 50 percent of the project was devoted to research, 30 percent to service, and 20 percent to administrative and support services.

B. DANFA

In addition to its service and training activities, the Danfa project also began with a rigorous research design (1970-1975). As with the Narangwal project, this focused on an exploration of how family planning services could best be implemented. In the Danfa project's quasi-experimental research design, three rural areas north of Accra were to receive different service packages, and a fourth was to serve as a control area (Map B, page 5).

Area I:	comprehensive health care, health education, and family planning program
Area II:	health education and family planning program
Area III:	family planning program
Area IV:	control area

⁵ Family Planning (FP) included education and motivation, contraceptive services, and followup of users; Women's Services (WS) included fertility surveillance, prenatal care, labor and delivery assistance, and curative services; Child Care (CC) included periodic health surveillance and education, periodic measurement of weight and height, immunizations, nutritional supplementation and education, and curative care.

Complex demographic survey work was undertaken in these four areas. But this research design was abandoned after an external evaluation by APHA in 1975. Many problems had surfaced during the survey, and the resultant statistics were of questionable validity. A highly mobile population had led to an outmigration of over 50 percent of the population sample in 5 years. The use of volunteers to gather vital statistics had not been successful. Thus, during the 1976-1979 period, the Danfa project reduced its more academic research interests and concentrated on practical service work. This included the integration of mother and child health services with family planning,⁶ general health education, epidemiological studies, training programs, and institutional development at the Ghana Medical School.

C. LAMPANG

The Lampang project attempted to extend mother and child health, family planning, and nutrition services into every village in the province. Its basic strategy included the following elements:

1. Reorganizing the provincial health service infrastructure
2. Creating a cadre of paraprofessionals (wechakorn)
3. Training locally recruited community health workers
4. Encouraging community and private sector involvement

The project design was a quasi-experimental pretest/posttest type. Map C (page 6) shows the regions of the province into which Lampang project activities were sequentially introduced. Baseline and followup surveys were undertaken in both the experimental and control areas and covered such basic topics as community health and nutrition and cost and task analysis.

All three projects attempted to evaluate the specific impact of their activities. This proved difficult, however, for medical research in the field differs in essential ways from that in a laboratory setting. In addition, it is not easy to successfully combine complex research designs with the delivery of health services. Some project design problems common to the three projects include the following:

⁶ These integrated services included well baby clinics, perinatal care, family planning services, nutritional education, health education, and immunizations.

1. The Narangwal and Danfa projects dealt with populations too small to support the type of demographic data they hoped to obtain (e.g., changes in fertility rates).
2. The comparability of Narangwal's village groups is questionable. Danfa's four research areas also varied in socioeconomic status and other important indicators. Lampang's baseline and followup survey samples may also not be comparable because they varied in household size distribution.
3. Narangwal's service packages did not begin simultaneously in all village groups, and the services themselves changed over the years.
4. The accurate collection of vital statistics (births, deaths) has been a problem in all three projects.
5. An overwhelming amount of information was gathered in all of the projects; there was also a backlog in data processing.
6. Danfa and Lampang staff lacked statistical expertise. Lampang began its activities with no specific evaluation plan and lacked original budgeting for one. It received conflicting directions from various sections of AID, APHA, and other contractors concerning what to evaluate.
7. "Interference" from new health facilities constructed during the projects' lifespans makes it impossible to attribute any changes in health status purely to the projects themselves.
8. The short timespan of these projects makes any definitive changes in such areas as fertility, morbidity, or mortality unlikely.

VI. IMPLEMENTATION

A. STRUCTURE AND STRATEGY FOR PRIMARY HEALTH CARE DELIVERY

In all three settings--Narangwal, Danfa, and Lampang--there had been a lack of qualified modern medical personnel in rural areas prior to project implementation. Thus all three projects developed novel approaches for the rural extension of modern services. The creation of new cadres of health workers who functioned at the village level was clearly not an easy task.

All of these projects involved large numbers of personnel with varying backgrounds (Appendix E).⁷ At Narangwal, the staff was selected by project directors from those responding to the project's newspaper advertisements. At Danfa, however, the Ghana Medical School was responsible for all recruitment. At Lampang, staff included Ministry of Public Health employees, individuals from other government agencies, and also some who were hired from the private sector.

Approaches towards salaries also varied. At Narangwal, government salary scales were used, but the project was able to arrange for some supplementation. At Danfa and Lampang, however, local salary scales were followed quite closely.⁸

All three projects emphasized the education and training of all personnel. This involved the reorientation of modern medical personnel to the nuances of delivering rural health care and working with paraprofessionals, along with the development of a respect for traditional lifestyles. It also involved the recruitment and training of local villagers to participate in the project's activities.

Each project developed networks of personnel through which health care was extended to the village level. Some types of key personnel also functioned in the villages themselves, on the periphery of the three projects' health delivery systems. This was very important, for the success of a primary health care project depends largely on effective activities on this grass-roots level. As summarized in table 2 on the following page, some of these peripheral workers were formally educated and were originally from urban areas; others were illiterate and were from the rural communities themselves.

Brief profiles of the projects' key personnel are included in the paragraphs below. In addition, Diagrams A, B, and C graphically illustrate the general plan for service delivery at Narangwal, Danfa, and Lampang.

⁷ The Narangwal staff all lived at the village level. In addition to scores of Indians, this included expatriates from six different countries who worked in the field in groups of two to three. In the case of Danfa, there were always four to five expatriates from UCLA in residence in Accra. At Lampang two American advisors from the University of Hawaii have been in the field over the total life of the project.

⁸ All three projects experienced a high turnover in staff, but a core group always remained. In general, this reflected the individual project's degree of institutional affiliation. Narangwal lacked a strong institutional base, and provided little long-term security for employees. The situation at Danfa and Lampang was slightly different because of their respective relations with the Ghana Medical School and the Ministry of Public Health. Staff turnover did, however, exist.

Table 2. Key Peripheral Personnel Who Functioned at the Village Level

Project	From Outside Village		Local Village Residents			
	Those with advanced schooling (mostly in health-related careers)	Number trained	Lay personnel (volunteers)	Number trained	Traditional medical practitioners	Number trained
Narangwal, India	Family Health Workers (FHWs)	57			Traditional Birth Attendants (TBAs)	(informal contacts)
	Family Planning Educators (FPEs)	5				
	Family Planning Workers (FPWs)	7				
Danfa, Ghana	Health Education Assistants (HEAs)	16	Village Health Workers (VHWs)	20	Traditional Birth Attendants (TBAs)	90
Lampang, Thailand	<u>wechakorn</u> (paraphysicians)	96	Health Post Volunteers (HPVs)	901	Traditional Birth Attendants (TBAs)	352
			Health Communicators (HCs)	5,363		

1. NARANGWAL (Diagram A)

The Family Health Worker (FHW) (total, 57). The FHWs were based in the village subcenter clinics and resided in the project's FPWSCC, FPWS, and FPCC villages. They carried out activities related to curing and preventing disease, and family planning. The FHWs were all women and all had previous training as Auxiliary Nurse Midwives (ANMs). They received 6 to 8 weeks of training as FHWs. Their monthly salary of approximately \$50-65 was very attractive. FHWs were responsible for 90-95 percent of all of Narangwal's service contacts. A physician and a Family Health Supervisor (FHS) visited all FHWs once a week to review their work. Serious cases were then referred to the physician. Biweekly meetings of all FHWs were held at the Narangwal center. Approximately 75 percent of their time was spent providing services and 25 percent in project research. Thus it was estimated that the FHW/population ratio could be enlarged from the 1:1,350 existing at Narangwal to 1:2,000-3,000. If service packages were simplified, this could become 1:5,000, which had been the Indian government's plan for ANMs in 1969. The actual ratio of ANM to total population, however, was 1:10,000.

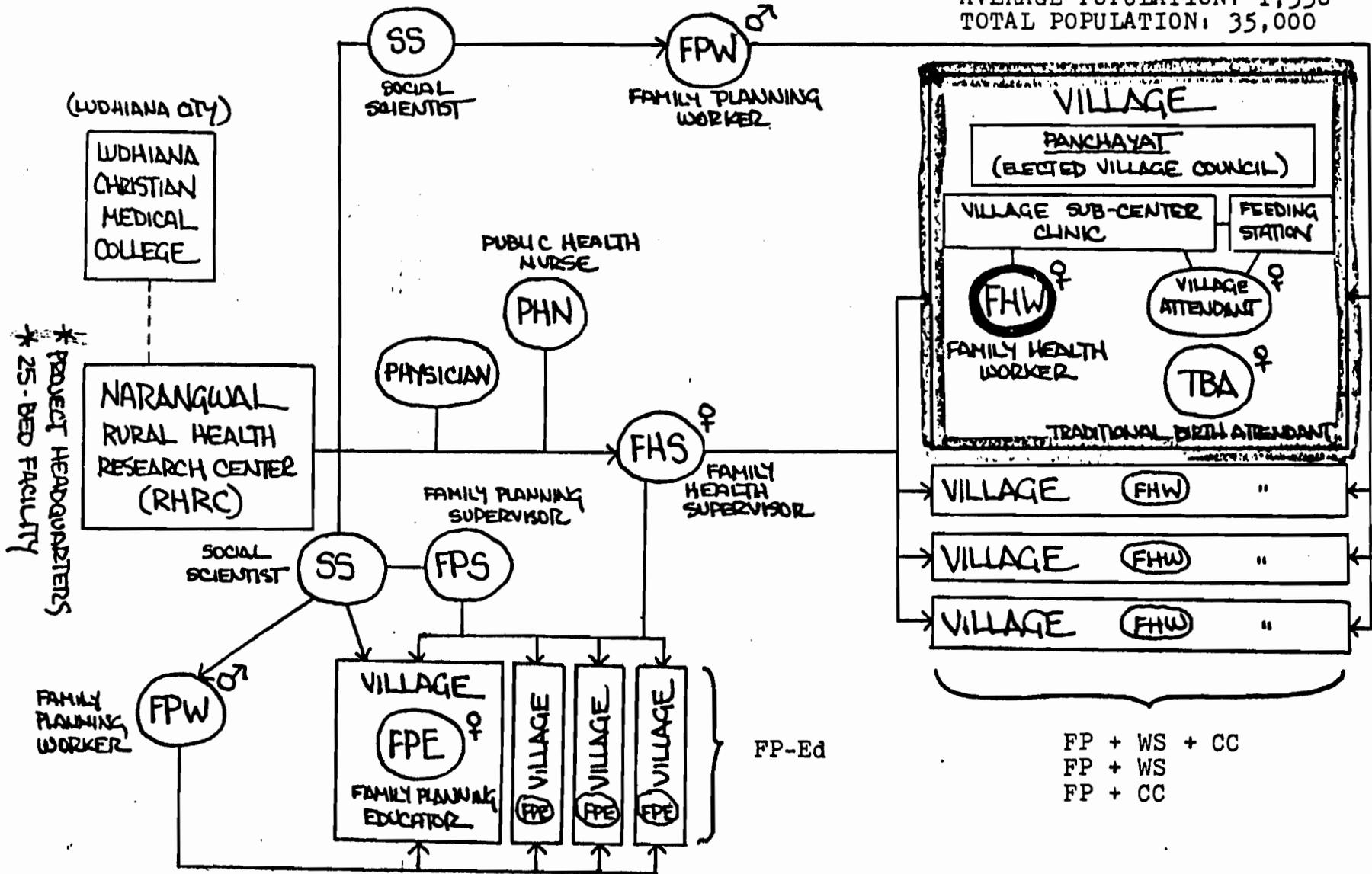
The Family Planning Educator (FPE) (total, 5).

The Family Planning Worker (FPW) (total, 7). The FPEs were five young women who had previously been junior basic teachers. The FPWs were seven men who had either high school or college degrees. The FPEs lived in four of the study villages that were part of the FPEd group. FPWs worked in all of the project communities. Training for these individuals was similar in basic format to that for the FHWs, although the course was less thoroughly developed. The activities of both the FPEs and the FPWs included family planning motivation and education, the distribution of some types of contraceptives (villagers were referred to physicians for such contraceptives as the pill and IUDs), and followup of users. The establishment of rapport with villagers was one of their main tasks. Both groups were supervised by social scientists on the team.

The Traditional Birth Attendant (TBA). Although there was no formal TBA training program in the Narangwal project, some attempts were made to coordinate FHW village-based activities with the childbirth activities of the TBAs, who were usually elderly village women. The FHW and the TBA went together to the home of the pregnant woman to make initial arrangements for delivery. The TBA was to inform the FHW when labor began. If difficulties arose, the TBA was to call the FHW for assistance. The FHW was expected to instruct the TBA about "danger signals" during pregnancy and delivery and to attempt to improve the TBA's knowledge and skills at every opportunity. Some TBAs were recruited to become village attendants at the subcenter clinics where they assisted in such activities as providing nutritional information, and feeding and weighing infants. At the termination of the Narangwal project, a formal TBA training program was under consideration to make the TBA a more active member of the health delivery team, but this never materialized.

DIAGRAM A: THE NARANGWAL HEALTH DELIVERY SYSTEM

19 VILLAGES
 AVERAGE POPULATION: 1,350
 TOTAL POPULATION: 35,000



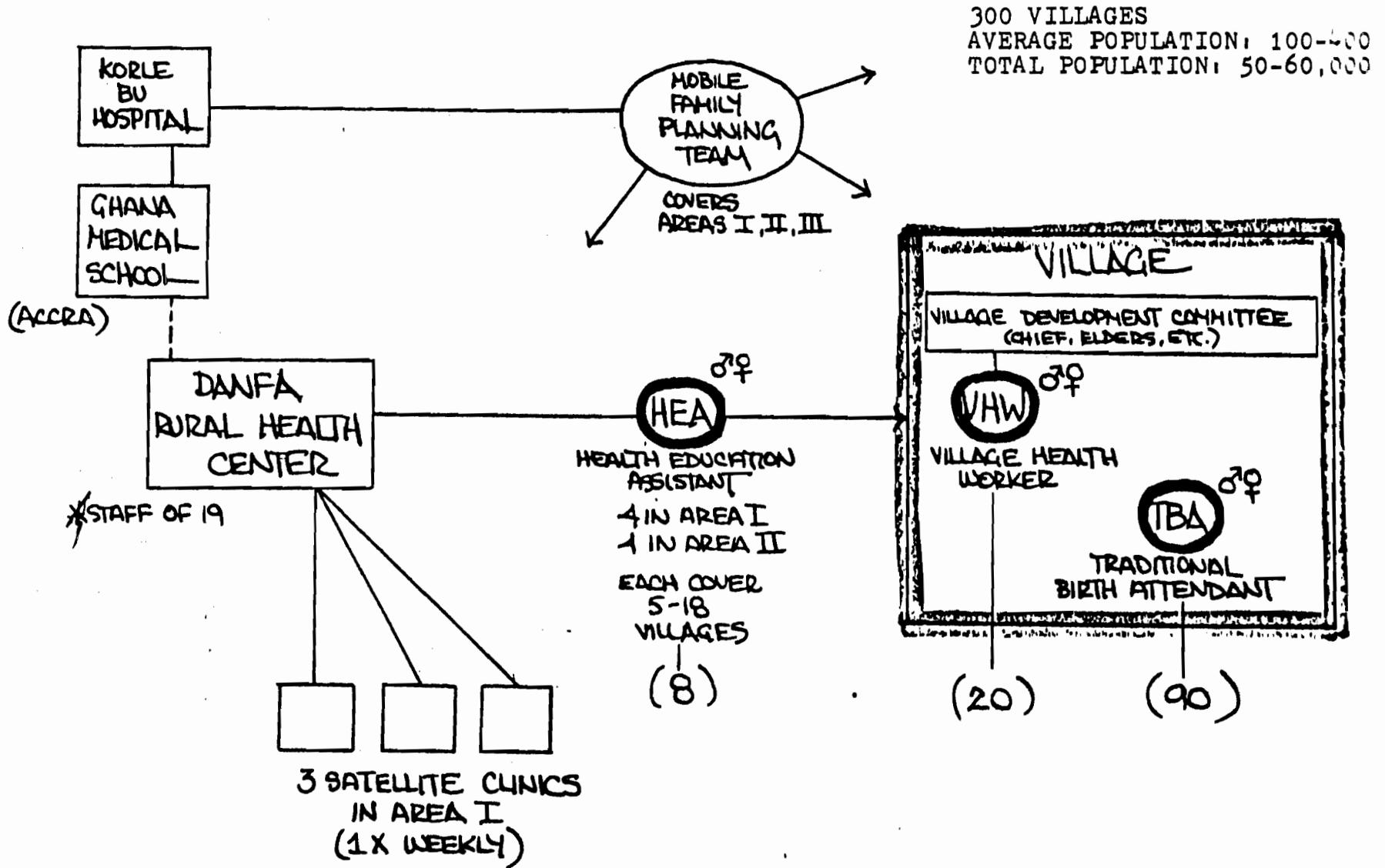
2. DANFA (Diagram B)

The Health Education Assistant (HEA) (total, 16). HEAs were male and female community health workers whose activities at Danfa were specifically in the area of health education. Similar to Narangwal's FHWs, they had previously been health workers (nurses, nutritionists, sanitarians, or family planning workers). The 3-month course for HEAs included community organization, health education, mother and child health care, family planning, nutrition, and environmental sanitation. Total costs for HEA training were quite high: \$86,552 or approximately \$5,400 per HEA. In addition to their work in disease prevention, the HEAs encouraged community participation in Danfa's programs, formed village development committees, supervised trained TBAs, and served as a link with the Danfa Rural Health Center. Each HEA served a cluster of 5-18 villages and resided in the area. They were supervised by either a public health nurse or a health education supervisor.

The Village Health Worker (VHW) (total, 20). VHWs were multipurpose volunteer workers who were natives of the villages in which they served. These literate men and women functioned in both preventive and curative capacities, and strengthened local communities' links with the Danfa Rural Health Center and its satellite clinics. They were active in only nine of the approximately 300 villages in the project. Village development committees nominated the VHWs, who were given an 11-week course (110 hours of instruction) in preventive activities, curative care, and an overview of Ghana's primary health care programs. Two-thirds of the course dealt with disease prevention. The total cost of the course was \$17,664, or approximately \$880 per VHW. The VHWs were supervised by their trainers (a public health nurse, sanitarian, and expatriate staff), the local HEA, and the village development committee. Drugs to be dispensed by VHWs were furnished by the project. VHWs charged nominal fees to their patients, usually about 17¢ for a visit by a child and 35¢ for an adult.

The Traditional Birth Attendant (TBA) (total, 90). In contrast to the program in Narangwal, the Danfa project had a formal training program for TBAs. These were elderly, illiterate farmers--both male and female. They participated in a 2-month series of 4-hour sessions held twice weekly. Instructors were a senior nurse midwife, two public health nurses, and an expatriate physician. The TBAs were instructed in prenatal monitoring, referral of high-risk cases, aseptic delivery and umbilicus care, and mother and child health and family planning promotion. At the close of the course they were given certificates and midwifery kits. The total cost of the training program was only about \$10,063, or approximately \$110 per TBA. Trained TBAs were monitored by a public health nurse, a midwife, and local HEAs; monthly refresher courses were also held.

DIAGRAM B: THE DANFA HEALTH DELIVERY SYSTEM



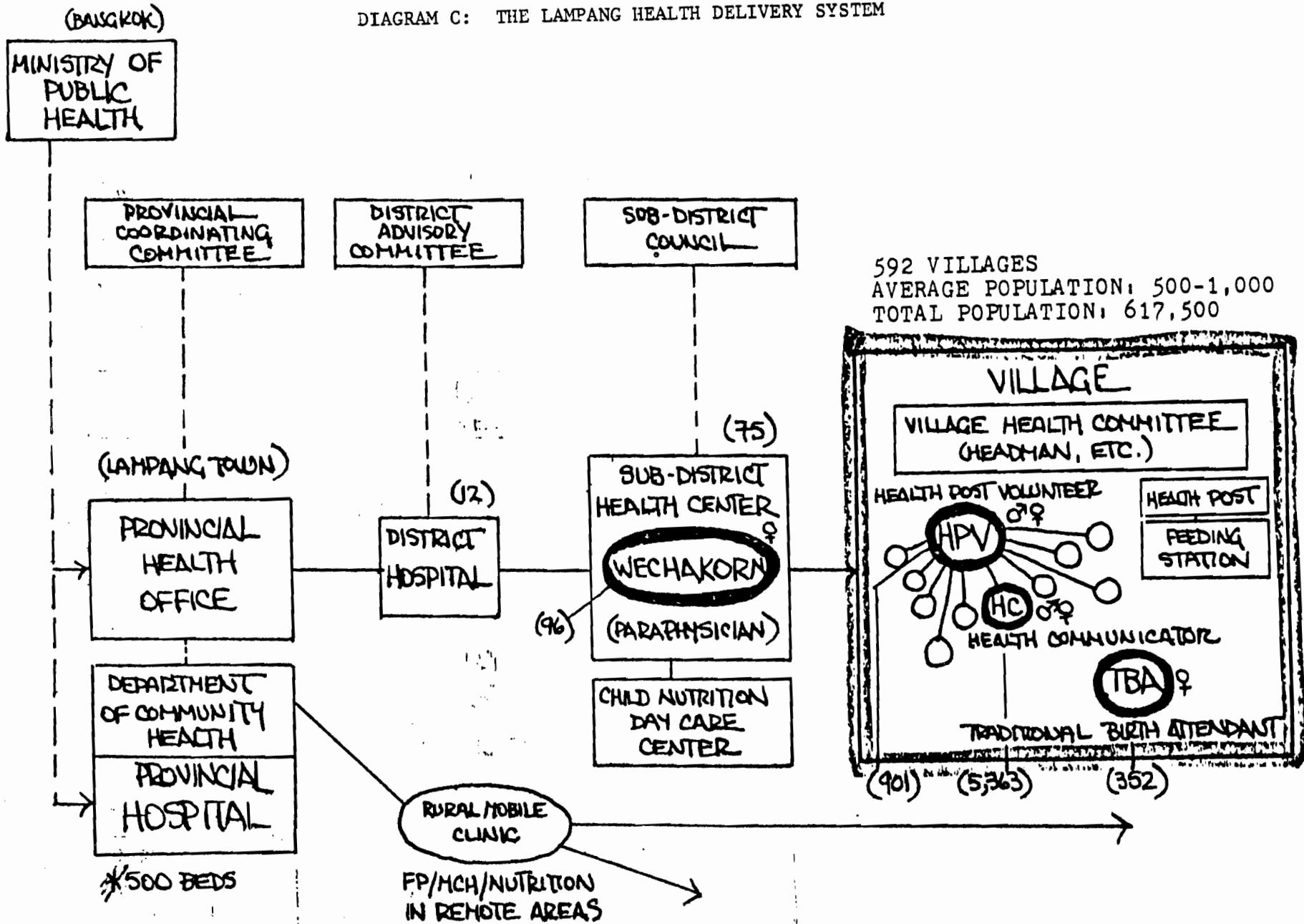
3. LAMPANG (Diagram C)

The Wechakorn (Community Paraphysician) (total, 96). The basic task of Lampang's wechakorn (wecha=medicine, korn=provider; a term coined by the project) was to extend health services into rural regions of the province. They attempted to lessen the patient load of the provincial hospital by treating patients at the subdistrict health center level. The wechakorn also linked village health workers with other sectors of the government health delivery system. Similar to Narangwal's FHWs and Danfa's HEAs, wechakorn had previously been part of the government health system. They were nurses, midwives, sanitarians, or nurses' aides. More than one-half were female. Their training lasted 1 year and was based on the MEDEX (physician extender) program. Physicians conducted classes in clinical care, mother and child health, community health, field supervision, etc. The training cost per wechakorn was about \$2,000. At the subdistrict level they were supervised periodically by physicians. Their work included providing curative care at the health center, referring serious cases to the hospital, supervising other health center staff, promoting community health programs, and supervising 5-10 Health Post Volunteers (HPVs), 50-100 Health Communicators (HCs), and about 5 trained Traditional Birth Attendants (see below).

The Health Post Volunteer (HPV) (total, 901). Similar to Danfa's VHWs, Lampang's HPVs were multipurpose workers in curative, preventive, and promotive aspects of health. Most were literate farmers or shopkeepers--both male and female. They participated in a 2-week training course conducted at district hospitals. The course was taught by both government personnel and the Lampang project training staff. Cost for training a HPV was approximately \$124. Each HPV was given a manual, a wound-dressing kit, an array of nonprescription drugs, and a drug cabinet. HPVs set up practice in their homes; their activities included providing curative care, referring serious cases to the subdistrict health center, supporting community health programs, giving advice about family planning, distributing contraceptive pills and condoms, and supervising Health Communicators (HCs--see below). The HPV obtained drugs at a 20 percent discount. These were sold at a small profit. An HPV usually cleared about \$5-10 per month. The HPVs and their families also received free medical care at government health facilities. Wechakorn supervised the HPVs, and tried to visit them once a month.

The Health Communicator (HC) (total, 5,363). One HC was chosen by village health committees for every 10-15 households in each village. Their role was to promote the activities of the HPV and the subdistrict health center staff within the community. The HCs were given a 2-day crash course in nutrition, mother and child health, family planning, sanitation, and related subjects. After the course, which was generally held in a local school or temple, small information manuals were given to the HCs. A total of \$17 was expended for each trainee. They were to be supervised by HPVs and wechakorn.

DIAGRAM C: THE LAMPANG HEALTH DELIVERY SYSTEM



The Traditional Birth Attendant (TBA) (total, 352). TBAs were trained to promote mother and child health and family planning in their villages; TBAs were usually illiterate, elderly women. The 2-week training course was held at the midwifery school in Lampang town, and was taught by project and midwifery school staff. The TBAs were instructed to advise villagers about government mother and child health services, detect and refer high-risk cases to the subdistrict health center, conduct aseptic deliveries, advise about good nutrition, encourage family planning, and distribute contraceptive pills and condoms. They were also to report births to the local HPV or the village headman. The total cost for the training of a TBA was \$112, which is very similar to the Danfa figure of \$110. Trained TBAs were entitled to free medical care at government health facilities. In the field, they were supervised by wechakorn or the health center midwife. They were to receive a short refresher course once a year.

Each project has shown that health workers functioning at the village level can be successful. But, as the following points illustrate, it is difficult to sustain this level of active involvement.

1. All three projects had substantial funding for supplies, transport, and manpower for their village-level activities. An important esprit de corps was also achieved during the course of the projects. Such characteristics made these undertakings special cases that would be difficult and costly to sustain or replicate.
2. Continuous support and supervision of peripheral workers is most important. Even in these projects this was not always achieved. Especially at Danfa and Lampang, the actual work of individual health workers in villages was not always adequately observed and monitored. Without sustained communications, the interest and morale of village workers will drop. Without drug resupply, they cannot function as they should.
3. Village-based personnel were often overloaded with tasks while their exact responsibilities were unclear. Frequently, curative care took precedence over preventive or promotive activities.
4. Training is generally easier to implement than are later supervision and support. It is, however, a crucial area. For villagers, small classes using adult education techniques that stress the creation of community participation are necessary. In-service and continuing education is very important.
5. For professionals such as Danfa's Health Education Assistants and Lampang's wechakorn, there was little opportunity for career promotion. The governments' civil service systems did not officially recognize the new cadres of workers created by the project. This led to morale problems.
6. Trained village volunteers such as Danfa's Village Health Workers and Traditional Birth Attendants and Lampang's Health Post

Volunteers felt that the nominal payment received from their fellow villagers was inadequate.

7. Peripheral workers varied in their degree of success. At Narangwal, the younger Family Health Workers seemed to be most successful in this innovative project because they had less to "unlearn" as health professionals. At Danfa, the older Village Health Workers functioned best, because they were established and respected village members; the younger VHWs often left for urban centers. Workers' personalities and the community's general enthusiasm also affected their success. Factors leading to the development of successful village workers should have been explored in more detail by all of the projects.
8. Relations between physicians and other modern medical practitioners who functioned on the village level, such as Narangwal's Family Health Workers and Lampang's wechakorn, were not always congenial. When village-level personnel assumed tasks that had previously been the work of physicians, reeducation of the physicians to understand and accept such changes was necessary.
9. Relations between modern medical personnel and traditional medical practitioners were not always positive. Competition rather than cooperation sometimes occurred. Modern practitioners should be trained in local ethno-medicine. In addition to the training of Traditional Birth Attendants, other traditional medical practitioners should also be incorporated into primary health care delivery programs.

B. COMMUNITY PARTICIPATION

Community participation may be as important as infrastructure development in primary health care projects. Narangwal, Danfa, and Lampang all attempted to involve communities in their projects and encouraged them to solve their own problems. This process takes much time and effort, however. Villagers often distrust government programs based on earlier negative experiences; governments often fear active community involvement as politically unsettling. The traditional amount of community participation also varies between cultures. (See Appendix C.)

At Narangwal, the local panchayats (elected village councils) were involved in project planning and implementation. They donated buildings for the village subcenter clinics. Some even formally adopted the Family Health Worker as a "daughter of the village" to ensure her safety and further her acceptance by the community. The panchayats also collected wheat from farmers for the project's nutrition program when supplies were short. Periodic meetings of project staff and village councils were held, and problems were resolved together. The Indian social scientists on the team were responsible for these important contacts. (See Diagram A.)

At Danfa, communications were first established with local village development committees. Some of these committees had been formed by government workers for earlier projects; others were newly established by the project's Health Education Assistants. Each was made up of the village chief and other leaders. The committees were most active in promoting environmental sanitation. Together with the health center sanitarian, they organized local labor to dredge ponds, improve water storage, and build communal pit latrines in 61 villages. In 9 villages, the committees also chose Village Health Workers and helped to design their training program. (See Diagram B.)

In most of Lampang's many communities, village health committees existed that had been previously formed by the government. Each was made up of the village headman and other influential men. Lampang staff first visited these committees to explain the project. The committees selected local individuals to be Health Post Volunteers and Health Communicators. These committees were supposed to generally support the project's activities. Subdistrict councils were also contacted. (See Diagram C.)

These examples of community involvement in health care projects are encouraging, but there were many problems and difficulties involved in generating and sustaining community participation. Among them were the following:

1. Active participation of communities existed in all three projects, but was somewhat sporadic.
2. Along with involving communities in planning a project, constant support and followup were crucial. To encourage participation and then not follow through can be disastrous for a project.
3. Sustained links with local groups were lacking, especially in Danfa and Lampang. In Lampang, villages were saturated with government programs calling for local participation in many areas of development.
4. The projects did not adequately explore why some villages' participation was greater than others. Thus, very few generalizations can be made.
5. In all three settings, males were the formal village leaders. Their support was, of course, important. But for such primary health care projects in which women were primary targets, more attempts should have been made to encourage female participation by working through more informal village leadership networks.
6. More host national social scientists should have been included in project staff. All personnel should have been trained in communications skills and in techniques to foster community participation.

VII. IMPACT ISSUES

A. BASIC INDICATORS

1. Narangwal

Comparisons between Narangwal's service villages and control villages at the close of the project showed the following trends:

Child Growth. Children receiving health and nutritional services were heavier and taller; average weight differences were 0.5 kg and average height differences were 2 cm.

Child Morbidity. Total illness was reduced by 20 percent, or 22 days per year, for children receiving health care.

Child Mortality. Children between 1 and 3 years of age in the group receiving food supplementation and infectious disease control had less than half the mortality rate observed in control villages. Also, neonatal deaths were fewer and the stillbirth rate was 23-35 percent lower in the service villages.

Family Planning Acceptance. When the project began, about 17-18 percent of couples were using modern methods. Family planning services were introduced into different village groups at different times, with the following results:

<u>Group</u>	<u>Elapsed time (years)</u>	<u>Percent using family planning</u>
Group 1 (FPWSCC)	4 1/2	51
Group 2 (FPWS)	4	54
Group 3 (FPCC)	3 1/2	46
Group 4 (FPEd)	2	37

Rates were still rising when the project terminated. Communication between spouses was an important factor determining family planning acceptance. Also, there were consistently higher family planning rates among users of health services than among nonusers. With women's services (WS), acceptance of family planning had an increased probability of 14-22 percent; with child care (CC), the increased probability was 20-31 percent.

Fertility Trends. A general 5 percent fertility decline per year occurred in Narangwal's service villages compared with 1 percent per year in other Punjab villages.

2. DANFA

The project administrators have reported the following information, which pertains to Area I (comprehensive care) unless otherwise noted:

Clinic Use. About 29 percent of the populace used the Danfa Rural Health Center at least once a year in 1970; after three satellite clinics were established by the project, clinic use increased to 56 percent by 1973. Attendance at prenatal and child clinics nearly doubled; 89 percent of women obtained prenatal care, and 74 percent of deliveries were performed by trained personnel. But in later years attendance at child clinics dropped, possibly due to the growth in village-based programs in malaria prophylaxis, immunizations, child weighing, and similar programs.

Preventive Aspects. There was an increase in available latrine facilities, and an increased understanding of disease causation. Some 72 percent of children aged 2 to 5 had weight-for-age cards, 69 percent had birth certificates, and 50 percent received some immunizations.

Community Participation. In 1977, 58 percent of households were involved in some community development activity, compared with only 37 percent in 1973.

Village Volunteers. In the first 15 months of activity, the 20 Village Health Workers had 14,015 patient encounters (3.1 encounters per village resident per year). They recruited 190 acceptors of family planning methods. The 90 trained Traditional Birth Attendants used sterile cord packs for every delivery. They recruited 240 acceptors of family planning methods (1974-1978).

Mortality (estimates). The crude mortality rate fell from 12.4/1,000 in 1971-1972 to 6.2/1,000 in 1976-1977. Child mortality fell from 24.7/1,000 in 1971-1972 to 18.1/1,000 in 1976-1977.

Family Planning Acceptance.

percent of couples ever using

<u>Area</u>	<u>1972</u>	<u>1977</u>
Area I	11	34
Area II	7	21
Area III	2	8
Area IV	5	5

Fertility Trends. Some 60 percent of Danfa female acceptors did not become pregnant for 12 months after beginning use of a modern contraceptive method. The birth rate was estimated to have fallen from 43/1,000 to 33/1,000 at the close of the project. The fertility rate was estimated to have fallen from 226/1,000 to 178/1,000 women aged 15-49.

3. Lampang

Most of this information is from the Hang Chat district (E₁) where the project began. The final report is not yet available, and thus these indicators are tentative. As a recent consultant to Lampang has noted (Reinke 1980:10):

The Lampang project faces the classic dilemma of watching well documented service outputs as indirect evidence of impact against much more fragmentary direct evidence of health and fertility outcome. Other projects lasting no more than five years have been notoriously unsuccessful in marshalling convincing evidence of health status or fertility change, and there is no reason to believe that Lampang will be unique in this regard.

Government Health Facility Use. Use of government health facilities increased greatly in the rural areas. Use of the subdistrict health centers doubled, with about 75 percent of all women and children using them annually. Home deliveries decreased from 61 percent to 47 percent. A general trend away from private drug purchase toward the use of government services was observed.

Nutrition. The nutritional status of infants, especially among the poor, showed some improvement.

Environmental Sanitation. Household environmental conditions improved. More units now have a clean water source and provisions for excreta disposal.

Village Workers. During the first year of Health Post Volunteer activity, they served 13-38 percent of all villagers seeking medical attention. This later decreased, but each HVP continues to make an average of 332 service contacts per year; each provides contraceptives for about 12 women. About two-thirds are working up to expectations. Trained Traditional Birth Attendants assist at about 23 percent of the province's births.

Family Planning Acceptance. Family planning acceptance was quite high (54.8 percent) when the project began. Since 1974 there has been a significant increase in the use of contraceptives among young married women, however, and the birth rate has decreased.

B. INFRASTRUCTURE AND INSTITUTION DEVELOPMENT

None of these three projects was replicated in totality by its host government; this had not been their purpose. Their impact upon primary health care in India, Ghana, and Thailand has been considerable, however.

Because of the Narangwal project's early termination (see Appendix D) it was not expanded into other regions of India as planned. Many members of its large staff later worked in other government-sponsored primary health care projects throughout the nation, however. Narangwal helped to establish a tradition of health services research in India in both the government and medical schools.

Many people were trained in the Danfa project, both in Ghana and abroad (see Appendix F). This included about 500 medical students from the University of Ghana Medical School, and large numbers from other schools associated with the Ministry of Health. As health practitioners, they are now assuming influential posts in the government. Nineteen participant trainees were sent to UCLA for graduate work in health-related fields; all returned to Ghana, and most are now employed by the Department of Community Health in the medical school.

The Lampang project has also had a ripple effect, because most of its staff continues to work in primary health care. Appendix F shows the personnel it has trained. In addition to the health workers described earlier, all administrators and supervisors from the Provincial Health Office and the provincial hospital were given orientation in primary health care delivery. All health facility staff throughout the province was similarly trained.

In the University of Ghana Medical School, the Danfa project helped to strengthen and enlarge the Department of Community Health. In the Ministry of Health, the Health Planning Unit used data from Danfa in planning primary health care activities in other areas of Ghana. The Lampang project established the Department of Community Health within the provincial hospital to coordinate its urban activities with the rural activities of the Provincial Health Office. This plan may be extended to additional provinces.

Other aspects of the projects have also been adopted or expanded by their host countries. The training manual developed for Narangwal's Family Health Workers was later published in India: Child Health Care in Rural Areas: A Manual for Auxiliary Nurse Midwives (Uberoi et al., 1974). It is not only used by auxiliary nurse midwives; it is also purchased by citizens as an Indian "Dr. Spock" for home-centered health care. The manual for training Traditional Birth Attendants in Danfa has been used in similar programs sponsored by the Ghanaian Ministry of Health. Danfa's family planning manual is also being used in the nation's midwifery schools.

The Lampang project has directly influenced Thailand's Rural Primary Health Care Expansion project which is now being conducted in 20 provinces.⁹ It is training wechakorn-like nurse practitioners and is also

⁹ The Royal Thai Government did not wait for definitive results from Lampang before it began to implement portions of the project in other areas. Similar parallels may be drawn with Narangwal and Danfa. In both India and Ghana the governments made the decision to integrate family planning with other aspects of health care delivery before definitive results from the Narangwal and Danfa projects were available.

extending the role of subdistrict health center midwives. Village Health Volunteers and Village Health Communicators are also being recruited. Lampang training materials are being used.

C. COST ANALYSIS

1. Narangwal

Excluding the large amounts spent on research and salaries for expatriates, the following generalizations can be made about the service costs of the Narangwal project. Personnel costs were very high in all experimental groups of villages. Food supplements, drugs, and transportation were also expensive components.

The total per capita costs per year by service package were:

<u>Group</u>	<u>Cost per capita</u>
Group 1 (FPWSCC)	\$2.23
Group 2 (FPWS)	1.80
Group 3 (FPCC)	2.84 ¹⁰
Group 4 (FPEd)	1.16

The comprehensive service package, FPWSCC, was the most cost-effective. It had the lowest costs per unit of service. The average cost per new family planning acceptor was about \$12. The average cost was twice as high in the FPWS group, and three times as high in the FPCC and FPEd groups. In the comprehensive package, health and nutrition were also improved. The annual per capita drug cost was about \$.33. Other figures important to a comprehensive cost analysis include the following:

<u>Category</u>	<u>Cost</u>
Cost per perinatal death averted	\$ 9.87
Cost per infant death averted	37.33
Cost per child death averted	101.47
Cost per day of infant illness averted	.53
Cost per day of child illness averted	.40

Narangwal's comprehensive care package of about \$2 per capita was much higher than the \$.27-.40 per capita estimated by the government's primary health centers in 1969. However, it was also estimated that if the

¹⁰ Group 3 was also part of Narangwal's nutrition project; this accounts for its higher per capita cost.

Narangwal staff had received lower salaries, if medicine and supplies had been purchased from the government store, and if food had been donated from outside or collected from villagers, the per capita cost could have been reduced to about \$1. Although this is still four times what the government was spending, project staff noted that government-sponsored primary health centers' mother and child health care services only covered one-fourth of the population.

2. Danfa

Due to sampling difficulties resulting from migration and other population changes, the following figures are only estimates. As in Narangwal, a considerable amount was spent on research activities and salaries for expatriates. Major service costs were expended for personnel, drugs and supplies, and transportation.

The average cost per patient visit at the Danfa Rural Health Center and its satellite clinics was \$1.13 in 1973 and \$3.34 in 1976. In part, this reflects Ghana's staggering inflation rate. These figures were similar to other rural health center costs in Ghana.

The annual per capita cost for health education ranged from \$.50 to \$1. The annual per capita cost for Danfa's family planning program in Area I was about \$35.

The comprehensive health care program in Area I was implemented at a cost of about \$6.26 per capita. This is greater than what the Ghanaian government spends in other rural areas.

Approximate training costs per person for key personnel were as follows:

<u>Personnel</u>	<u>Cost</u>
Health Education Assistants	\$5,400
Village Health Workers	880
Traditional Birth Attendants	110

3. Lampang

The complete analysis of the data from Lampang is not yet available. Thus the following figures are very tentative.

The operating costs for the entire provincial health program increased fourfold between 1974-1975 and 1977-1978. In part this was due to a build-up of health facility infrastructures in rural areas. Operating costs for district facilities rose from 28 percent to 53 percent. Inflation was also involved in the increase. Salary costs rose 40 percent between 1977 and 1979.

Recent figures show that operational costs are about \$4,750 annually for a subdistrict health center. Assuming that it serves a population of 6,000, this means a cost of about \$.80 per capita.

The medical care costs at the subdistrict level are about one-third of those at the district hospitals. The estimated costs per service contact at the subdistrict health centers are as follows:

<u>Service contact</u>	<u>Cost</u>
medical care	\$1.11
mother and child health	.97
family planning	2.02
nutrition	3.48
communicable disease control and sanitation	1.18

Training costs per person for key personnel are estimated to be as follows:

<u>Personnel</u>	<u>Cost</u>
<u>wechakorn</u>	\$2,000
Health Post Volunteers	124
Health Communicators	17
Traditional Birth Attendants	112

Project personnel have estimated that major components of the Lampang plan could be implemented elsewhere for only 11 percent of the external-assistance funds it has received, or about \$300,000 over a 4-year period. They note that many costs are nonrepetitive (e.g., training methodologies and materials and evaluations).

D. EQUITY CONSIDERATIONS AND THE STATUS OF WOMEN

The primary beneficiaries of the Narangwal, Danfa, and Lampang projects were the rural poor--especially women and children. All three projects attempted to actively involve villagers in improving their own health status. The inequitable distribution of health services between urban and rural communities is a problem that all three projects helped to change.

Differences in socioeconomic status among villagers themselves were more common at Narangwal than at Danfa or Lampang. This is due to India's caste hierarchy (see Appendix C). Before the Narangwal project, poor families were the least frequent users of government health facilities and family planning. Their health and nutrition status was the poorest. The Narangwal project presents convincing evidence that health care coverage can be equalized despite differences in socioeconomic status. Acceptance levels for family planning methods are now similar for rich and poor.

Services providing curative treatment were even provided more often for poorer children than for rich children. Home visits by the Family Health Workers were very important to this progress, as was the village leader's encouragement to all to participate in the program.

Women were the primary beneficiaries of the Narangwal, Danfa, and Lampang projects. Participation of village women in primary health care projects is crucial not only because their health is important, but also because they are the major health care providers in the home. All three projects attempted to form women's clubs, but this was not a major activity. Because formal village leaders in all settings were male, female networks should have been used more often to organize the community for the implementation of primary health care projects.

Positive impacts were made on the status of female project personnel. Family Health Workers at Narangwal, female Health Education Assistants at Danfa, and female wechakorn at Lampang were all able to assume positions of leadership in the projects' health care delivery systems. In all three projects, locally recruited female volunteers, such as Danfa's Village Health Workers and Lampang's Health Post Volunteers and Traditional Birth Attendants, also profited from increased status in their communities.

E. PROJECT IMPACTS BEYOND HOST COUNTRIES

During the lifespan of each project, annual conferences were held either at the project site or in the capital city. Not only host nationals attended, for these were usually international events. Narangwal, Danfa, and Lampang were all showpiece projects and had steady streams of visitors from many countries interested in primary health care. (Sometimes the great number of guests impeded project staff activity.) The impact of such information exchange is impossible to measure, but it is significant.

The distribution of final project reports has been extensive. Films have also been produced about Lampang and Danfa.

Numerous papers have also been presented at international conferences by project staff--both host nationals and expatriates. All three projects were represented at the International Conference on Primary Health Care in Alma Ata, USSR, in 1978. There have also been scores of publications (books, professional articles, etc.) resulting from the Narangwal, Danfa, and Lampang projects. Attempts have been made to publish not only in the United States, but also in India, Ghana, and Thailand. Danfa's discovery of a high prevalence of polio in Ghana changed the orientation of medical science towards that disease in developing countries, and reached a large international audience. Conference paper presentations and publications from all three projects are likely to continue for years.

VIII. SUMMARY: LESSONS LEARNED FROM NARANGWAL, DANFA, AND LAMPANG

The Narangwal, Danfa, and Lampang projects are classic cases in the area of primary health care. These projects have shown that integrated mother and child health, family planning, and nutrition services can be effectively extended into rural communities. They have also demonstrated that a variety of health workers can function together successfully at the village level, and that participation of rural communities can be fostered. At the same time, these heavily funded projects have also shown how very difficult primary health care is to implement and sustain.

The relative success of the three projects is difficult to assess, because this judgment varies according to the specific criterion being considered.

With its comparatively small target population, Narangwal has produced the most reliable and definitive data from its extensive research. The support and supervision it was able to provide for village-based health workers was also more successful than efforts in Danfa or Lampang. Lacking a strong institutional base within the Indian government, however, project activities were not sustained after the project's termination.

Danfa was quite successful in its training of physicians and other health personnel both in Ghana itself and in the United States. Many of these individuals have since assumed active roles in the development of a Ghanaian health care infrastructure. In addition, Danfa's publication record is impressive. The quality of data gleaned through its research, however, is uneven, and in this area the project does not earn such praise.

Lampang was the most successful of all three projects in institutional development, leading as it did to a restructuring of an entire Thai province's health care delivery system. In the area of sustainability it has also been the most successful. In addition, major components of the project have been replicated in other provinces throughout the country. But support and supervision of its paraprofessionals and village health workers has not always been adequate due primarily to its large target population.

What are some of the major lessons learned from the Narangwal, Danfa, and Lampang projects? No single formula is adequate or comprehensive enough to serve as a universal design for the implementation of primary health care projects. Each sociocultural context is unique and demands a flexible and tailor-made approach. However, a number of generalizations, many of them related to the topics mentioned in the introductory section of this report, can be made.

1. Central to the primary health care concept is the need for the full participation of local communities. Villagers should be supported in their efforts to solve their own health problems. This demands their involvement in every stage of a project--

- planning, implementation, and evaluation. Not only should formal village leaders, who are usually male, be involved, but female participation must also be fostered by including more informal village leadership networks in this process.
2. All types of traditional medical practitioners should become active participants in primary health care projects, not simply Traditional Birth Attendants as has been the case at Danfa and Lampung and, to some extent, Narangwal. In addition, modern medical practitioners should become familiar with local ethno-medical beliefs and practices. Supportive partnerships must be created between traditional and modern personnel.
 3. For primary health care activities to continue beyond the lifespan of a specific project, institutional affiliation with a nation's Ministry of Health or other government agency is important. Further, if primary health care is to be successfully implemented on a countrywide basis, national health systems must be decentralized. In addition to this restructuring of the health care delivery system itself, modern medical personnel must accept a reorientation of medical authority that allows the delegation of more medical control to health workers on the periphery of the health care system. Continuing support and supervision of village workers is of utmost importance, and requires skilled management expertise along with the creation of supportive and flexible networks of personnel. Among the three projects reviewed above, Lampung has been most successful on a large-scale basis in these areas. Ideally, an opportunity for in-depth research would be provided in a circumscribed area that permitted the exploration of new approaches and that dealt with various management or logistical problems as they arose.
 4. As the Narangwal, Danfa, and Lampung projects have shown, rural communities are interested in improving their health status. Curative services are most desired; preventive and promotive aspects demand intensive health education components. For a project to be successful and self-sustaining, villagers must be able to see positive changes over a short period of time. This necessitates the development of short-term programs, especially at the beginning of the project.
 5. Elaborate research designs are too costly and time-consuming. Many pitfalls exist in the collection and analysis of accurate data. In addition, it is difficult to combine detailed research programs with the delivery of health services, as all three projects, Narangwal, Danfa, and Lampung, have discovered. Research undertakings should be kept practical. If host governments are to appreciate and use research results, they must receive information in a timely fashion. More short-term research should be encouraged, with concentration on intermediate impact measures rather than ultimate indicators. Ongoing statistical expertise is also crucial.

6. As at Narangwal, host national social scientists should be part of every primary health care project. Their role in understanding the sociocultural dynamics of village communities is crucial.
7. A number of areas require additional research. The following topics are of primary import:
 - a. Villagers' perceptions of projects must be explored. On the community level, village inhabitants are the best evaluators of what worked, what did not, and why.
 - b. The factors influencing community participation in various settings should be examined in more detail.
 - c. In-depth study of village-level health workers' activities should be initiated.

This research could be undertaken in the many AID-sponsored primary health care projects now being conducted; it would provide valuable feedback and guidelines for ongoing project improvement. Cross-cultural comparisons would also be of great value. Additional information may exist in other AID-sponsored project reports and documents that could be examined and compared with these findings.

More important, workshops should be held in which the field experiences of project participants who have worked on the village level are exchanged. This data should then be assembled and disseminated.

Since the Narangwal, Danfa, and Lampang projects were initiated, the primary health care concept has evolved considerably. It still requires refinement, however. To further refine the concept to provide much-needed health care for the rural poor, AID should continue to support primary health care projects.

APPENDIX A

METHODS OF DATA COLLECTION

METHODS OF DATA COLLECTION

As part of this desk evaluation, project reports, publications, and other documents from the Narangwal, Danfa, and Lampang projects were first reviewed.

Individuals at AID who were associated with the projects or with primary health care projects in general were interviewed. In addition, trips were made to the contracting universities for the three projects reviewed--Johns Hopkins University, UCLA, and the University of Hawaii. In-depth interviews were conducted in the universities' Schools of Public Health with individuals who were directly involved with the Narangwal, Danfa, and Lampang projects. A visit was also made to three members of the Narangwal team who were teaching at Wright State University in Dayton, Ohio. Telephone interviews were conducted with other team members.

Initially, this report was to have been written "from the beneficiaries' point of view," but, unfortunately, this proved to be impossible. Detailed information on this important perspective was severely lacking in both reports and interviews. This reflects a basic limitation of desk evaluations. To provide an adequate analysis of a project's effects on its intended beneficiaries, on-site evaluations of beneficiaries' perspectives during the lifespan of the project are essential, and these require a thorough understanding of the subject by project personnel.

APPENDIX B

LIST OF INDIVIDUALS INTERVIEWED

LIST OF INDIVIDUALS INTERVIEWED

GENERAL (USAID)

Abby Bloom PPC/PDPR
David Dunlop ST/HEA
Lenni Kangas NE/TECH
Graham Kerr NE/TECH
Maureen Lewis PPC/PDPR
Barbara Pillsbury ASIA/DP

NARANGWAL

Alex Alexander
Wright State University School of Medicine
Dayton, Ohio

Joseph Alter
Wright State University School of Medicine
Dayton, Ohio

Cecile DeSweemer
School of Hygiene and Public Health
Johns Hopkins University

Donald Ferguson
USAID
ST/HEA

Duff Gillespie
USAID
ST/POP

Prakash Grover
Fox Chase Cancer Center
Philadelphia, Pennsylvania

Barbara Herz
World Bank
Washington, DC

Robert Parker
School of Hygiene and Public Health
Johns Hopkins University

Prakash Sangal
Wright State University School of Medicine
Dayton, Ohio

Carl Taylor
School of Hygiene and Public Health
Johns Hopkins University

DANFA

Donald Belcher
Veterans' Medical Center
Seattle, Washington

Stewart Blumenfeld
USAID
ST/N

Alfred Neumann
School of Public Health
University of California, Los Angeles

Charlotte Neumann
School of Public Health
University of California, Los Angeles

David Nicholas
School of Public Health
University of California, Los Angeles

Haven North
USAID
AA/AFR

Julius Prince
Pacific Consultants
Washington, DC

William Ward
School of Public Health
University of South Carolina

Michael Warren
Department of Sociology and Anthropology
Iowa State University

LAMPANG

Herb Dalmat
American Public Health Association/Consultant
Washington, DC

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Rosemary DeSanna
MEDEX
University of Hawaii

Michael Favin
American Public Health Association
Washington, DC

Jean Hankin
School of Public Health
University of Hawaii

Norman Holly
USAID
PPC/PDPR

Jerrold Michael
School of Public Health
University of Hawaii

William Reinke
School of Hygiene and Public Health
Johns Hopkins University

Emmanuel Voulgaropoulos
School of Public Health
University of Hawaii

Beth Wassenberg
School of Public Health
University of California, Los Angeles

APPENDIX C

THE SOCIOCULTURAL CONTEXT AND BASELINE INFORMATION

THE SOCIOCULTURAL CONTEXT AND BASELINE INFORMATION

The three target populations reflect different patterns of behavior and beliefs in such areas as social organization, religion, and economic status. For the successful implementation of primary health care projects, knowledge and appreciation of the traditional ways of life of the beneficiaries are of utmost importance.

A. NARANGWAL

Villages of the Narangwal project in the Punjab area of northern India (Map A) have been experiencing rapid socioeconomic development since the early 1960s. As part of the "Green Revolution," agricultural production has increased substantially, primarily in wheat, but also in cotton, millet, and corn. Paved roads have been extended throughout the region, electricity has been introduced into almost every community, and schools for both boys and girls now exist in most villages. Baseline survey data assembled by the Narangwal team in the 1960s yielded the following generalizations about their target population in this rich region of India (Rural Health Research Center 1975).

The 19 villages participating in the project, with a mean population of 1,350, were composed of households organized strictly according to caste affiliation and exhibited definite socioeconomic stratification. The Jat caste of landowning farmers comprised more than half the population; the remaining Ramdasias or lower castes were primarily agricultural laborers. Some 95 percent of the populace were of the Sikh religion; 5 percent were Hindu.

Every village was composed of two to three factions, each cross-cutting a number of castes organized by jajmani, or hereditary patron-client relations. A panchayat, or elected village council, guided the community's internal activities and also represented the community to higher governmental officials.

Approximately 40 percent of Jat heads of households were literate, compared with less than 25 percent of Ramdasias; the literacy rate of adult females was considerably less. About 90 percent of the villagers' mud brick homes had pumps in their courtyards, and 40 percent were equipped with electricity. The health and nutritional status of women and children in Ramdasia households was considerably poorer than that of Jats; this information is clearly important to an interpretation of the findings of this report.

A related study conducted by the Narangwal team (Johns Hopkins University, Department of Public Health, 1976) in adjacent districts found that the most commonly reported health problems were respiratory ailments, infectious and parasitic illnesses (diarrhea, fevers, etc.),

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and digestive problems. Great seasonal variability existed, with twice the number of disease episodes occurring in the spring as in any other season. An existing government Primary Health Center served approximately 80,000 inhabitants.¹ In addition to providing curative care, this facility was also engaged in such outreach activities as smallpox immunization, malaria control, and family planning.

At Narangwal village in the Ludhiana district, a Primary Health Center was established in 1955; in collaboration with Ludhiana Christian Medical College (which is based in the district capital, Ludhiana, 17 miles to the north), it served as a training site for interns. Since 1961, this has also been the location of the Rural Health Research Center, a field research site associated with Johns Hopkins University.

The Narangwal team's study revealed that the services of traditional medical practitioners² were sought out by the villagers much more frequently than those of the government Primary Health Center. For example, in the case of infectious and parasitic illnesses, traditional medical practitioners handled 66 percent of the cases reported, whereas the Primary Health Center treated 18 percent, and private modern practitioners saw 16 percent. Traditional medical practitioners were popular in spite of the fact that average per episode cost for

¹ India has been attempting to extend modern medical services into its rural regions since the 1940s. By 1969 nearly 5,000 Primary Health Centers had been established throughout the nation, each serving a population of about 80,000. Nearly 23,000 smaller subcenters each served approximately 10,000-15,000 people (Takulia et al., 1970). While the subcenters were usually staffed only by an auxiliary nurse midwife, the Primary Health Centers had a much larger and broader staff, composed of approximately fifty people: physician, public health nurse, nurse midwife, auxiliary nurse midwife, female health visitor, pharmacist, family planning workers, vaccinators, trained dai (Traditional Birth Attendant), etc. (Johns Hopkins University, Department of International Health, 1976). Interns from various medical colleges were also assigned to Primary Health Centers for training (Taylor et al., 1976; Takulia et al., 1967). These modern facilities provided general medical care, mother and child health care, family planning, communicable disease control, and environmental sanitation.

² Traditional medical practitioners in the Punjab included (a) vaids, male practitioners who follow the Ayurvedic system of medicine based on Hindu texts; (b) hakims, male practitioners who follow the Unani system of medicine based on Greco-Roman tenets; (c) homeopaths; and (d) dais, female Traditional Birth Attendants. (See Neumann and Bhatia, 1973.) Many vaids and hakims are graduates of schools for traditional medicine and are members of professional societies.

traditional treatment was approximately \$.65 compared with approximately \$.04 for Primary Health Center services.

The age composition of these village communities was quite young, with more than 34 percent under the age of 15. Females exhibited a mean parity of 4.0. A definite preference for sons existed in this patrilineal society; often secluded in her compound, a woman's basic role was that of mother and homemaker.

However, since 1960, the birth rate has been declining significantly, from 50/1,000 in 1959 to 35/1,000 by 1969. Partially related to the general development of the region, this phenomenon has been more specifically attributed to a rise in the age of marriage for females, from 15 years a few decades ago to 19.8 years in the early 1970s.³ In addition, even prior to the Narangwal Population Study, both traditional and modern family planning methods had been used; indeed, about 50 percent of the village couples were using some type of family planning method, with 17-18 percent of this group employing modern methods.⁴

³ In the Punjab, villages are exogamous (i.e., females marry out of their home communities). For the birth of their first few children, women usually return to the homes of their parents, possibly staying for a period of 6 months before going once again to the villages of their husbands. This poses obvious difficulties for the collection of vital statistics.

⁴ India adopted a National Family Planning and Population Policy in 1951. In 1962, extension programs were stressed, and in 1966, high-cost massive campaigns were begun. There was some backlash due to rumors about the IUD and the involuntary nature of the programs.

Continuing to realize the seriousness of its population growth, the Indian government's input for family planning in its fourth 5-year plan (1969-1970/1973-1974) was \$444 million. In the fifth 5-year plan (1974-1975/1978-1979), this sum was increased to \$688 million. Concerned with its unachieved goals, the government renewed its commitment to family planning in 1976, and stressed the voluntary involvement of local communities. Sterilization, IUDs, condoms, and oral contraceptives were the major methods used. "Motivational strategy centered on intensive information and education efforts and expanded Maternal and Child Health Care" (United Nations Fund for Population Activities, 1978:154).

B. DANFA

The Danfa project encompassed approximately 300 small villages, with a mean population of 100-400, which are scattered throughout the tropical region of Southern Ghana some 8-50 miles north of the capital of Accra (Map B). The following general information about these communities was assembled primarily from the findings of a number of baseline surveys conducted by the project team in the early 1970s; it pertains mainly to the Danfa district itself (Danfa Project Personnel, 1979).

Composed of a number of different ethnic groups (63 percent Ga, 14 percent Akwapim, 7 percent Ewe, and others), the populace also reflected a variety of religious affiliations (53 percent Christian, 31 percent "traditional religion," 6 percent Muslim, and others). Some 75 percent were engaged in agriculture, with staple crops being maize, cassava, yams, and plantain. Not only were the majority of adult males involved in farming, but females were also active participants; of the large number of women classed as "economically active," 37 percent were farmers while 40 percent were traders.

As is the case in many regions of Ghana, the population was extremely mobile; this has traditionally been the case, and it is still true today. This high degree of mobility resulted in a number of difficulties for the Danfa project's longitudinal data collection activities. Indeed, their sample exhibited a 50 percent attrition rate in 5 years. Correspondingly, statistics included here must be considered as estimates.

Organized by clans, the Ga communities, in particular, carry on symbiotic relations with clansmen on the coast near the capital. Indeed, in the past, Accra was a conglomerate of Ga villages. Each year a significant proportion (approximately 13 percent) of the populace--men, women, and children--would leave their inland hamlets and travel to the coast to engage in fishing; correspondingly, others would come north into the area for agricultural pursuits. Also, there were periodic travels for purposes of clan meetings and lengthy celebrations. Considering the present state of the national economy and the attractions of Accra's urban lifestyle, movement into the capital from the Danfa region has probably been increasing in recent years.

In the rural villages of Danfa, however, local clan ties remained strong, for there is a vigorous tradition of intercommunity support. Guided by the local chief, a group of elders, and, more recently, government-sponsored village development committees, a Danfa project survey found in the early 1970s that 37 percent of the households in the area had at least one member involved in some sort of cooperative community activity.

Approximately 44 percent of adults have attended school; most of these were male, and only 17 percent of females over 15 years of age are

literate. However, a high figure of 72 percent of children 6-15 years of age are presently enrolled in local schools.

Homes were made of mud adobe with thatched or corrugated metal roofs. Water supplies were scarce, and there were no deep wells in the region; communities relied on seasonal rainfall, streams, or stagnant ponds. Only one-tenth of the populace was served by a branch of a safe water supply piped in from Accra.

Health problems of the region--especially for children--included infectious diseases such as malaria, measles, diarrhea, respiratory ailments, skin infections, guinea worm, and polio. The danger of these illnesses was multiplied when they were combined with malnutrition. Maternal morbidity and mortality were generally attributed to hemorrhage, infection, and toxemia. The estimated infant mortality rate in 1972 was 54/1,000, while the crude death rate was 16/1,000.

Each area of the Danfa project's region of study contained a government health center or at least a health post.⁵ In Danfa village proper, a rural health center has existed since 1967. At that time the University of Ghana Medical School was instrumental in establishing it as a training site for its medical students in a rural region conveniently located near Accra.

The Danfa Rural Health Center provided additional health services to the region; some 70 percent of its patients lived within a 3-mile radius. A long-established traditional system of medical care continued

⁵ Until recent years, almost all of Ghana's modern health facilities were concentrated in urban areas. In 1964, the University of Ghana Medical School was established, and physicians began to be trained in-country. Subsequently, attempts were increasingly made to provide modern health services for neglected rural regions.

In 1973, the national physician-population ratio was 1:10,000. The degree of difference between urban and rural regions is apparent when we compare the ratio for the Greater Accra Region (1:6,000) with the Upper Region (1:100,000) (Warren and Tregoning, 1979).

In 1975, the National Health Planning Unit was established in the Ministry of Health. This unit is attempting to strengthen health services in rural regions, and its goal is to have community-based facilities throughout Ghana by 1990.

From 1975-1980, however, only 3 percent of Ghana's total budget was allocated to health. Of this amount, 88 percent was allotted to curative care while 12 percent was earmarked for preventive services (Warren and Tregoning, 1979).

to function and, indeed, many people, including some of the health center's staff, patronized modern and traditional medical practitioners simultaneously, in some cases for the same illness episode.⁶

The Danfa team found the age structure of the local populace to be extremely youthful, with approximately 50 percent under the age of 15. A 1972 baseline survey revealed a high birth rate of 56/1,000 (the annual population increase was 3.2 percent). The average female had seven to eight live births during her reproductive years, five to six of which survived.⁷ In this pronatalist setting, the mean number of children desired was 9.8 by men and 6.6 by women. There seemed to be no preference concerning the sex of offspring among women, but men desired three sons for every two daughters.

However, younger respondents wanted fewer offspring, and 72 percent of both men and women voiced approval of family planning. A baseline KAP showed that only 7 percent of the couples interviewed related that they used modern methods of family planning, but traditional methods of breastfeeding, abstinence, rhythm, and abortion were common.⁸

⁶ The major categories of traditional medical practitioners in Ghana are (a) herbalists (both male and female); (b) priest-healers; (c) priestess-healers; and (d) Traditional Birth Attendants (both male and female). A number of these practitioners have organized the Ghana Psychic and Traditional Healers Association (Warren and Tregoning, 1979).

⁷ In the Danfa region, marriage is a fluid relationship, and remarriage is very common. The average age at first marriage for males is 25.2 years and for females 18.4 years.

⁸ Since the 1960 census, the government of Ghana has been aware of its high rate of population growth, and in 1967 the Ghana Planned Parenthood Association was formed. In 1969 the nation was one of the first in Africa to issue an official population policy, and in 1970 the Ghana National Family Planning Programme was initiated. This is based in the Ministry of Finance and Economic Planning. Family planning services are provided by the Ministry of Health, the Department of Social Welfare, the Ghana Medical School, and the Planned Parenthood Association of Ghana. The focus of family planning services is largely urban, and by 1972 only about 2.5 percent of Ghanaian women of reproductive age had accepted modern methods. By 1975-1976, there were 192 clinics throughout the country and an estimated 53,000 users (Danfa Project Personnel, 1979; United Nations Fund for Population Activities, 1978).

C. LAMPANG

The Lampang project embraced all of Lampang province, which is located in northern Thailand (Map C). This is a vast area (approximately 4,890 square miles) of mountains and forests with a population of 617,500. The town of Lampang, capital of the province, has a population of 50,000. Located in fertile valleys of intensive agriculture, there are some 592 villages throughout the area that average in size from 500-1,000 inhabitants. Data included here were assembled in the Lampang project's baseline community health survey in 1975 (Lampang Project Personnel, 1979).

The 2,600 households included in the survey exhibited the following socioeconomic standings: 4.5 percent high socioeconomic standing, 70.2 percent middle class, and 25.6 percent low socioeconomic standing.⁹ In many cases, communities themselves varied in their general degree of prosperity.

Most individuals were farmers, and rice was the major crop; in addition, peanuts, pineapple, and sugarcane were grown. Women, who have traditionally enjoyed a relatively high status in Thai society, also participated in agricultural activities, fishing, and other economic undertakings. Although not formally involved in village-level decision making, they usually managed their family's budget.

The vast majority of Lampang province was Theravada Buddhist. Villages were governed by a local headman, and had long-standing traditions of community cooperation and self-help. This took the form of group participation in agricultural work and home and temple construction. Such undertakings were partially religious in motivation, for they allowed a Buddhist to "do merit."

The population enjoyed a high, overall literacy rate of 79.1 percent. Most individuals, both male and female, had completed at least 4 years of schooling.

Almost all households had access to shallow wells, and in 50 percent of the units the well was located in their compound. Also, about 50 percent of the households had access to water-sealed latrines.

⁹ Larger households surveyed were usually of higher socioeconomic standing and reported less morbidity. However, later examination has shown that a significantly greater proportion of the samples was composed of small households in the baseline survey than in the followup surveys (Reinke, 1980, 1981a). This poses problems for comparison.

The region's most prevalent health problems as reported by respondents were diarrhea, respiratory illnesses, digestive problems, and fever. Malnutrition among children complicated these conditions. Infant mortality rates were found to vary from 53.6/1,000 in one region to 74.2/1,000 in another section of the province.

At the beginning of the Lampang project, an extensive government health service infrastructure existed in Lampang province. The 1973 ratios of various health practitioners to population in Lampang province were as follows:

<u>Health practitioner</u>	<u>Ratio</u>
physicians	3:100,000
nurses	9:100,000
midwives	10:100,000
sanitarians	5:100,000

A 300-bed provincial hospital in Lampang town, with 22 physicians and 58 nurses, was largely curative in orientation. Also centered in the town, but distant from the hospital administratively, was the Public Health Office that dealt with the rural areas of the province. Rural facilities included district hospitals (in 3 of the 12 districts), subdistrict health centers (in 26 of the 75 subdistricts), and 33 village midwifery centers.¹⁰

¹⁰ Only 2-3 percent of Thailand's national budget is allocated to health services. Most of its modern medical practitioners reside in Bangkok or in the nation's other larger urban centers.

For a number of years, however, Thailand has made some attempts to provide health services for its massive rural population, but these undertakings have been quite limited in scope. For example, as early as 1960 the Ministry of Public Health sponsored the small Village Health and Sanitation Project that established village sanitation committees and constructed wells and latrines.

More recently, two pilot projects in rural health care delivery have also been conducted. From 1964-1968 in Pitsanuloke province, rural health centers were constructed and local villagers were recruited to be health workers. Later, in 1968-1971 in Chiangmai province the Saraphi project attempted an integrated approach to health care delivery. This included mother and child health, family planning, nutrition, and communicable disease control services. It recruited villagers to serve as Health Post Volunteers and Health Communicators. Both of these pilot project efforts influenced the Lampang project, especially in the area of recruitment of local health personnel.

In addition to these government facilities, there were numerous private pharmacists, drug-sellers, and injectionists scattered throughout the province, along with many traditional medical practitioners who provided medical care for the populace. Traditional medical practitioners in Lampang province include the following: (a) herbalists, who practice according to an amalgam of Indian and Chinese medical tenets; (b) magical or spiritual healers; and (c) Traditional Birth Attendants. Herbalists often have formal training; for example, there is a School of Traditional Medicine in nearby Chiangmai. These individuals may be licensed by the Ministry of Public Health.

Indeed, the Lampang baseline survey showed that the province's government health facilities were underutilized. Only 27 percent of the respondents who had been ill sought assistance from these facilities, while some 50-60 percent had purchased medicine, either modern or traditional, from other sources. In the area of maternal health care, however, 75 percent of the deliveries were supervised by modern medical personnel; 63 percent of these were home deliveries.

Some 37 percent of Lampang's population is under the age of 15, but only 12 percent is under the age of 6. The crude birth rate is approximately 20/1,000, and the population growth rate is 1.8 percent per year. The fertility of the province has been falling rapidly since the late 1960s, seemingly at a faster rate than in other regions of the country that contain more Muslims. This phenomenon is largely attributed to the intensive government program in family planning, however, in which all of the provinces' government health facilities distribute contraceptives. In addition, the traditionally high status of women and the emphasis placed upon the individual in Theravada Buddhism are also involved (Knodel et al., 1980).¹¹

In 1975, 54.8 percent of Lampang women of reproductive age were using modern family planning methods, with most choosing the pill. Women using contraceptives had an average of 3.3 children, while those not using any method had an average of 2.6 offspring.

¹¹ Thailand established a national population policy in 1970. Its family planning program has met with considerable success, and by 1976 the annual population growth rate had been reduced from 3.1 to 2.5. In 1976, the government decided to distribute the pill at no charge.

The present goal is to reduce the population growth rate to 2.1 by 1981. Programs concentrate on underprivileged groups, and attempts are being made to integrate population programs with health, education, and general development projects for the rural populace and the poor (United Nations Fund for Population Activities, 1978).

Thai fertility declined about 40 percent between 1969-1979 in both urban and rural regions--one of the fastest rates of decline in all developing countries.

APPENDIX D

BACKGROUND HISTORY AND ADMINISTRATIVE ARRANGEMENTS

BACKGROUND HISTORY AND ADMINISTRATIVE ARRANGEMENTSA. NARANGWAL

A long-established research and database existed for the Narangwal region prior to the beginning of the population project in the late 1960s. Earlier undertakings of the Rural Health Research Center (RHRC), which was directed by C. E. Taylor at Narangwal, include:

1. A study initiated in 1961 of the rural orientations of interns and physicians (Takulia et al., 1967; Taylor et al., 1976)
2. A functional analysis project (1964-1970; partial AID funding) that developed a research framework for the analysis of health center functions and community needs (Johns Hopkins University, Department of International Health, 1976; Parker et al., 1972)
3. Studies of beliefs and practices of the local populace related to health and nutrition (Grover et al., in press)
4. A nutrition project (1966-1971; partial AID funding) that explored the interactions between nutrition and infection in preschool children (Kielmann et al., 1978; Parker et al., 1978; Taylor et al., 1978)

Over the years, the Narangwal team sponsored annual conferences at the village itself to discuss the findings and application of their research, and a number of government officials from Delhi attended these events. At the Third Annual Narangwal Conference in 1964, the Minister of Health and Family Planning, Dr. Sushila Nayar, suggested that the RHRC undertake in-depth research on the integration of health and family planning services, and the Narangwal team was eager to undertake such a project. At that time there was a desire on the part of the ministry to explore novel but affordable means to implement family planning; to date, activities in rural regions of India had been heavily focused at the health center level and had failed to reach many villagers.

Initially the RHRC began to explore only how the IUD could be promoted in the context of health care delivery at the health center and subcenter levels in the Narangwal area. At this early stage, PL-480 funding was obtained by Johns Hopkins University staff. The project was under the direction of the Indian Council of Medical Research (ICMR) and not the Ministry of Health and Family Planning.

In 1969, however, the project was enlarged to embrace many other aspects of the complex relationship between family planning and mother and child health services. It remained under the direction of ICMR.

The long-term project (1969-1974) was centrally funded by AID Washington (NESA Bureau, later the Asia Bureau, and the Office of Population); AID Washington and not the Delhi mission assumed full monitoring responsibilities. In addition, funds were obtained from WHO, ICMR (when PL-480 funds were cut in 1972), and other sources. Termination occurred abruptly in 1974.¹

In the late 1960s there were many differences of opinion within AID itself and also among applied academicians on the merits of integrating family planning with health services compared with the merits of a free-standing family planning approach. Indeed, this debate has persisted even into the 1980s. In any event, specific data concerning these different approaches were lacking, population-related funding was available, and Narangwal provided a valuable testing ground for various hypotheses about this knotty subject.

B. DANFA

The Danfa Comprehensive Rural Health and Family Planning Project was the final outcome of lengthy Ghanaian attempts, largely by the physician Dr. F. T. Sai, to establish a rural research and training site for University of Ghana Medical School (UGMS) students. As Deputy Director of Medical Services in the Ministry of Health and later as head of the Department of Preventive and Social Medicine at the UGMS, Sai first sought funding for the project from UNDP in 1965. When this proved unsuccessful, the UGMS initiated the rural project on its own in 1966-1967 by establishing a rural health center in the Ga village of

¹ The termination of the Narangwal project in 1974 was related to a number of factors:

- a. Indian-American relations at the time of the Bangladesh war
- b. Close proximity of Narangwal to the Pakistan border
- c. Presence of expatriates in a village setting near the Pakistan border
- d. Close proximity of Narangwal's study villages to an air force base (and their spatial arrangements with respect to the base)
- e. infighting within the Ministry of Health

Danfa.² This site is conveniently located about 18 miles north of Accra.

In 1969 Sai sought outside funding for activities at Danfa from AID Ghana. The resulting project paper was drafted with UGMS and Mission staff participation.³ Following submission to AID Washington, the large-scale Danfa project (1970-1979) was established. Funding for the project was first approved with Title X money from the Office of Population, with later financing from the Africa Bureau. In addition, UNICEF provided some assistance. The UCLA School of Public Health received the contract to provide technical assistance for Danfa.⁴

² When local chiefs and elders in the Danfa region were asked by Ghana Medical School staff and government officials what were their communities' most pressing needs, they responded that a hospital was most desired. The Danfa chief provided a large plot of land, and villagers furnished labor to build the health center; women of the area fetched the necessary water for the modest unit's construction.

When work on the building began, a ceremony was held that was attended by both villagers and representatives from Accra. The ceremony included prayer to locally recognized gods, libations of locally produced gin, the slaughter of a ram, feasting, and general celebration.

A joint village development committee was formed that led to considerable rivalry among local chiefs. Workers frequently abandoned construction activities to tend to their fields or attend funerals. In addition, heavy rainfall in 1968 slowed building progress considerably. But finally in 1969 the rural health center was completed, and in 1970 it was officially opened at a ceremony directed by the Prime Minister (Sai et al., 1972).

³ Julius Prince, a physician who was then the Special Assistant for Population Planning in the Africa Bureau and who had previously developed a rural health care delivery project in Ethiopia, traveled to Accra to aid in the drafting of the project paper. In 1973 Prince became Health, Population, and Nutrition Officer in Ghana, a post that he held until 1977. Prince had met Sai much earlier in 1962 at a United Nations conference in Paris where they had discussed Prince's experiences in Ethiopia and related them to Ghana's future health care delivery development (Peterson, 1978).

⁴ Alfred K. Neumann of UCLA's School of Public Health, who became Co-Director of the Danfa project, had been a classmate of Sai at Harvard. They had been in correspondence over the years, and Neumann had worked on a short-term project in Ghana in the early 1960s.

Similar to events in Narangwal, the Danfa project was initiated at a time when funding for population-related research was plentiful. As evidenced in the sections concerning Danfa's project goals and objectives and project design, early in its history it also attempted to explore the relative virtues of integrated health and family planning services versus more freestanding family planning approaches.⁵

Danfa was conceived basically as a service, research, and training project. Ghanaians were to retain responsibility for service delivery, the UCLA staff primarily for handling the research component, and both UGMS and UCLA staff for participating in training activities. Although somewhat oversimplified, it should be noted that in this complex scheme differences in the general priorities of the involved parties existed, with the UGMS mainly concerned with the training of its medical students, UCLA focusing upon research opportunities, and AID interested in low-cost family planning delivery schemes.

C. LAMPANG

This project's lengthy history begins in Washington long before its inception in Thailand in 1974; only a brief review is included here.

In 1971 the Development and Evaluation of Integrated Delivery Systems (DEIDS) program was proposed by TA/H. International in orientation, this undertaking was to have encompassed four large sub-projects integrating low-cost health, family planning, and nutrition in

⁵ Although research and training were stressed in Sai's original proposal, there had been no mention of family planning itself. Of course, at that early date the Ghanaian government had not set forth an official population policy either.

In addition, it is worth noting some similarities between the early project design of Danfa and that of Narangwal. This may be partially attributed to the fact that A. K. Neumann, Co-Director of the Danfa project, had earlier been on the staff of the Narangwal project in the Punjab. From 1965-1967 he had been Project Director for the functional analysis feasibility study and his wife, Dr. Charlotte Neumann, had been the Project Officer of the nutrition study.

various nations.⁶ It was hoped that the DEIDS scheme, which stressed ongoing evaluation, would furnish comparative information that could serve as a guide for the later development of nationwide, cost-effective delivery systems in developing countries.

The use of Title X population funds (initially \$15 million) was proposed and the American Public Health Association (APHA) was contracted by AID to organize and administer DEIDS. \$2.7 million was assigned to APHA and \$3.1 million was allotted to each of the four sub-projects. Subsequently, reconnaissance teams visited 12 countries⁷ for potential implementation of the programs and four nations were finally selected (Pakistan, Ecuador, Thailand, and Panama). Of these four sites, however, "DEIDS/Thailand" was the only subproject ever to be implemented,⁸ and the total program budget was cut drastically.

⁶ Interestingly, in advocating a health systems approach to increase effectiveness "in reaching target populations and changing population growth rates or reducing malnutrition in preschool children," the 1971 DEIDS PROP notes:

In contrast to Agency emphasis, AID-assisted countries have clearly expressed their intent through official resolutions in the World Health Assembly and by their observed national policies, that family planning and preschool child nutrition programs should be integral parts of the national health infrastructure....(p. 8)

⁷ These were Pakistan, Panama, Ecuador, Nicaragua, Honduras, Paraguay, Thailand, Korea, Philippines, Nigeria, Niger, and Zaire.

⁸ The 1975 DEIDS PROP revision noted:

due to a variety of complex issues, the Pakistan and Panama programs were reoriented toward an altered program emphasizing specialized aspects of health delivery and in that sense remained outside of the original design of the project....[N]egotiations between USAID/Ecuador and the Ecuadorian government did not result in implementation, and the project was cancelled. (pp. 14-15)

In addition, the 1975 PROP goes on to say that times had changed since the original 1971 DEIDS plan. With the increased interest in low-cost integrated health delivery on the part of developing countries and country missions themselves, a number of Regional Bureau projects were developed in this area:

It no longer appears necessary to centrally fund four demonstration projects if experience gained in other health delivery projects can be collected, analyzed, and widely disseminated....(p. 18)

A reconnaissance team arrived in Bangkok in early 1973, and in 1974 an agreement on the DEIDS Project was signed between the Royal Thai Government and APHA. The whole of Lampang province in northern Thailand was chosen as the region in which to develop, demonstrate, and evaluate a large-scale health delivery system. Criteria that led to the selection of Lampang province for this pilot project include:⁹

1. A population over 500,000
2. Adequate communications to and within the province
3. A noninsurgency area
4. Moderate economic status
5. Endorsement by provincial officials
(Lampang Project Personnel, 1979:18)

APHA subcontracted the University of Hawaii, School of Public Health, to provide technical assistance in this massive undertaking, which was administered by the Ministry of Public Health and put into operation by the ministry's Department of Health and the Lampang Provincial Health Office. Later the official name of the project was changed from "DEIDS/Thailand" to the more informative "Lampang Health Development Project."

In addition to Thai government financing, the Lampang project was centrally funded by AID Washington (first TA/H, later TS/HEA, then the Asia Bureau, and later TS/HEA again), along with some assistance from UNICEF and WHO.

Evaluation was a major component of the original DEIDS plan and this continued to be stressed in the Lampang project. However, as stated in the 1975 revised PROP, "the term 'evaluation' means widely different things to different groups of donors and recipients, and within AID opinion still is not unified" (p. 19). With respect to Lampang, APHA originally set forth some evaluative guidelines for its DEIDS subprojects, but these were later replaced by those of another consulting agency (Klaus, 1974). Because these were still not acceptable to all parties, a new orientation to evaluation of the Lampang project was subsequently established by field project personnel.

⁹ It should also be remembered that Lampang is a neighboring province of Chiangmai, the site of an earlier Thai government pilot project in integrated health care delivery. This Saraphi project (1968-1971) influenced the structure of the Lampang project considerably.

In short, the Lampang project's administrative arrangements were a product of a long and somewhat disjointed series of events.

APPENDIX E
PROJECT PERSONNEL

PROJECT PERSONNELA. NARANGWAL PROJECT PERSONNEL*

Family Health Workers (FHWs)	57
Family Planning Educators (FPEs)	5
Family Planning Workers (FPWs)	7
Family Health Supervisors (FHSs)	8
Family Planning Supervisors (FPSs)	1
Field Interviewers/Investigators	51
Data Processing Staff	36
Field Supervisors	7
Lab Technicians	2
Biochemists/Nutritionists	3
Public Health Nurses (PHNs)	8
Physicians	22
Social Scientists/Economists	13
Statisticians/Programmers	11
Administrators	7
	<hr/>
Total:	238

* Not listed here are such support personnel as secretaries, construction and maintenance staff, watchmen, village attendants, drivers, mechanics, and others. Actual numbers within each category varied over the years; these numbers indicate final totals.

Source: Rural Health Research Center, 1975.

B. DANFA PROJECT PERSONNEL*Danfa Rural Health Center

Health Center Superintendent

midwives

nurses

sanitarian

16

laboratory technician

dispensary assistant

engine attendants

laborers

Field Staff

Interviewers

30-45

(total life of project) (100-120)

Vital Events Registration volunteers/early years

57

Assistants

salaried/later years

18

Family Planning Team

nurse midwife

1

(total life of project)

(3)

family planning
assistant

1

clerk

1

(total life of project)

(1)

Health Education

Assistants (HEAs)

8

(total life of project)

(16)

* Not listed here are approximately 30 professionals from the Ghana Medical School, 3 from the Ministry of Health, and 4-6 expatriates from the UCLA staff. Actual numbers within each category varied over the years of the project.

Source: Danfa Project Personnel, 1979.

C. LAMPANG PROJECT PERSONNEL

BANGKOK Project Director, Department of Health, Ministry of Public Health

LAMPANG Field Director
Deputy Field Director
Hospital Planner
3 Field Coordinators

Expatriate Personnel:
Chief of Party (Evaluation and Research Specialist)
Planning and Programming Specialist

PLANNING AND PROGRAMMING DIVISION	PERSONNEL DEVELOPMENT DIVISION	EVALUATION AND RESEARCH DIVISION	ADMINISTRATIVE SERVICES DIVISION
chief	chief	chief	chief
assistant chief	assistant chief	senior statistician	assistant chief
2 supervision coordinators	4 technical instructors	2 junior statisticians	accountant
1 record/reports analyst	3 assistant instructors	12 data collectors	
		8 data coders	
		2 field supervisors	
		1 field manager	
		1 records analyst	
		1 computer programmer	
		1 research associate	

Source: Lampang Project Personnel, 1979.

APPENDIX F

TRAINING ACTIVITIES

TRAINING ACTIVITIESA. DANFAField Worker Training Programs

<u>Category</u>	<u>Approximate Number Trained</u>
Research/data gathering field workers and assistants	250
Health service paraprofessional workers	
Health Center staff	35-40
Health Education Assistants (HEAs)	16-20
Traditional Birth Attendants (TBAs)	90
Village Health Workers (VHWs)	20
Community volunteers for specific programs such as in nutrition, nutrition surveillance, malaria, prophylaxis, etc.	40
	<hr/>
Total	451-460

Summary of Types of Individuals Trained

<u>Category</u>	<u>Approximate Number Trained</u>
Field workers (outlined above)	455
Medical students	500
Students from Ministry of Health Training Institutions	700
Students from various University of Ghana departments	640
Participant Trainees (at UCLA)	19
Other (local)	50
	<hr/>
Total	2,364

Source: Danfa Project Personnel, 1979.

B. LAMPANGSummary of Lampang Training Activities

<u>Category</u>	<u>Approximate Number Trained</u>
Wechakorn (paraphysicians)	96
Health Post Volunteers (HPVs)	901
Health Communicators (HCs)	5,363
Traditional Birth Attendants (TBAs)	352
Trainers	133
Administrators and supervisors	72
Service personnel	270
	<hr/>
Total	7,187

Source: Lampang Project Personnel, 1979.

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